Министерство сельского хозяйства
Российской Федерации
Федеральное государственное бюджетное
образовательное учреждение высшего образования
«Воронежский государственный аграрный
университет имени императора Петра I»

Экономический факультет

Кафедра иностранных языков и деловой
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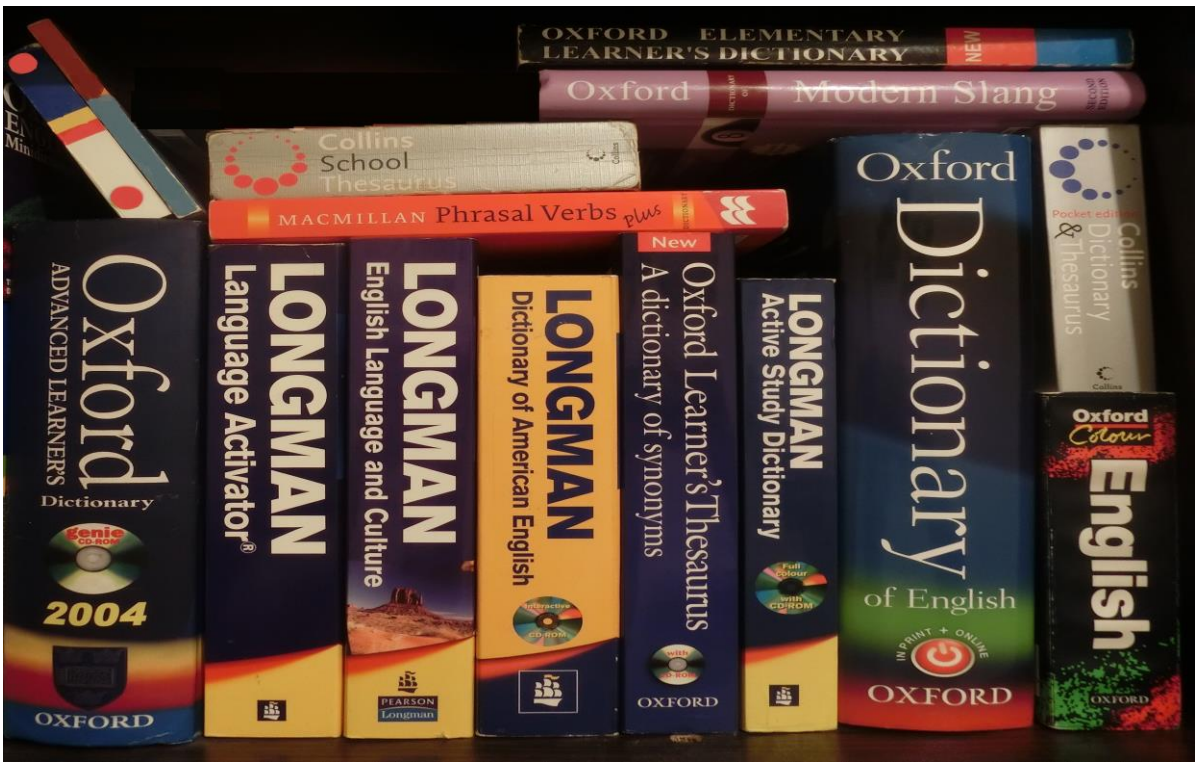
Методические указания и материалы по дисциплине «Английский язык» для самостоятельной работы обучающихся всех направлений очной и заочной форм обучения



Воронеж
2017

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ФГБОУ ВО «Воронежский государственный аграрный университет имени императора Петра I»

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Методические указания и материалы по дисциплине «Английский язык» для самостоятельной работы обучающихся всех направлений очной и заочной форм обучения рассмотрены и рекомендованы к изданию на заседании кафедры иностранных языков и ДМК (протокол №8 от 04 апреля 2017 г.) и методической комиссии гуманитарно-правового факультета (протокол № 8 от 19 апреля 2017г.)

Данные методические указания и материалы предназначены для самостоятельной работы обучающихся всех направлений очной и заочной форм обучения.

Основная цель методических указаний состоит в обеспечении обучающихся необходимыми сведениями, методиками и алгоритмами для успешного выполнения самостоятельной работы, в формировании устойчивых навыков и умений по различным аспектам обучения английскому языку, позволяющих самостоятельно решать учебные задачи, выполнять разнообразные задания, преодолевать наиболее трудные моменты в отдельных видах самостоятельной работы.

Методические указания и материалы
по дисциплине «Английский язык»
для самостоятельной работы обучающихся
всех направлений очной и заочной форм обучения

This book belongs to
_____
_____
Group_____

Введение

Самостоятельная работа обучающихся по иностранному языку является неотъемлемой составляющей процесса освоения программы обучения иностранному языку.

Самостоятельная работа обучающихся охватывает все аспекты изучения иностранного языка и в значительной мере определяет результаты и качество освоения дисциплины «Английский язык». В связи с этим планирование, организация, выполнение и контроль самостоятельной работы по иностранному языку приобретают особое значение и нуждаются в методических указаниях и методическом обеспечении.

Настоящие методические указания освещают виды и формы самостоятельной работы, систематизируют формы контроля самостоятельной работы и содержат методические указания по отдельным аспектам освоения английского языка. Содержание методических указаний носит универсальный характер, поэтому данные материалы могут быть использованы обучающимися всех направлений и специальностей при выполнении конкретных видов самостоятельной работы.

Основная цель методических указаний состоит в обеспечении обучающихся необходимыми сведениями, методиками и алгоритмами для успешного выполнения самостоятельной работы, в формировании устойчивых навыков и умений по разным аспектам обучения английскому языку, позволяющих самостоятельно решать учебные задачи, выполнять разнообразные задания, преодолевать наиболее трудные моменты в отдельных видах самостоятельной работы.

Используя методические указания, обучающиеся должны овладеть следующими умениями:

правильного произношения и чтения на английском языке;

продуктивного активного и пассивного освоения лексики английского языка;

работы с учебно-вспомогательной литературой (словарями и справочниками по английскому языку).

Целенаправленная самостоятельная работа обучающихся по английскому языку в соответствии с данными методическими указаниями, а также аудиторная работа под

руководством преподавателя призваны обеспечить уровень языковой подготовки обучающихся, соответствующий требованиям ФГОС по дисциплине «Английский язык».

В курсе обучения английскому языку используются различные виды и формы самостоятельной работы, служащие для подготовки обучающихся к последующему самостоятельному использованию английского языка в профессиональных целях, а также как средства познавательной и коммуникативной деятельности.

Контроль результатов внеаудиторной самостоятельной работы на учебных занятиях может проходить в устной, письменной или смешанной форме с предоставлением продукта творческой деятельности обучающегося.

Методические указания предусматривают ведущую роль самостоятельной творческой работы обучающихся, а задача преподавателя – организовать соответствующую познавательную деятельность и руководить ею.

Оценивание внеаудиторной самостоятельной работы

Критериями оценивания внеаудиторной самостоятельной работы являются:

уровень усвоения обучающимся учебного материала;

умение использовать теоретические знания при выполнении практических задач;

сформированность общенаучных умений, обоснованность и четкость изложения ответа;

оформление материала в соответствии с требованиями.

Оценка «5» - работа выполнена по установленному заданию, тема актуальна и раскрыта полностью, содержание соответствует теме, приведены необходимые пояснения, все вопросы логически связаны. Обучающийся проявил самостоятельность. Работа сдана в срок, выполнена аккуратно, имеет приложения в виде иллюстраций, таблиц, схем.

Оценка «4» - работа имеет несущественное несоответствие заданию, тема раскрыта полностью, однако приведены не все

необходимые пояснения, логика в раскрытии вопроса частично нарушена. Работа сдана в установленный срок, имеет приложения.

Оценка «3» - работа имеет существенное несоответствие заданию, тема раскрыта частично, нет необходимых пояснений, логическая связь между вопросами нарушена. Степень самостоятельности невысокая Приложения имеются, но выполнены неаккуратно.

Оценка «2» - работа выполнена не полностью, не в срок, обучающийся не понимает содержания работы, оформление небрежно.

РАБОТА НАД ПРОИЗНОШЕНИЕМ И ТЕХНИКОЙ ЧТЕНИЯ

Формы СР над произношением и техникой чтения:

- фонетические упражнения по формированию навыков произнесения наиболее сложных звуков английского языка;
- фонетические упражнения по отработке правильного ударения;
- упражнения по освоению интонационных моделей повествовательных и вопросительных предложений;
- упражнения на деление предложений на смысловые отрезки, правильную паузацию и интонационное оформление предложений;
- чтение вслух лексического минимума по отдельным темам и текстам;
- чтение вслух текстов для перевода.
-

Формы контроля СР над произношением и техникой чтения:

- фронтальный устный опрос на занятиях по отдельным формам СР;
- выборочный индивидуальный устный опрос на занятиях по отдельным формам СР.

Методические указания по самостоятельной работе над произношением и техникой чтения:

При работе над произношением и техникой чтения следует обратить внимание на несоответствие между написанием и произношением слов в английском языке. Это различие объясняется тем, что количество звуков значительно превышает число букв: 26 букв алфавита обозначают 44 звука, поэтому одна и та же буква в разных положениях в словах может читаться как несколько разных звуков.

При подготовке фонетического чтения текста необходимо использовать следующий алгоритм :

- освоить правильное произношение читаемых слов;
- обратить внимание на ударение и смысловую паузацию;
- обратить внимание на правильную интонацию;
- выработать автоматизированные навыки воспроизведения и употребления изученных интонационных структур;
- отработать темп чтения.

РАБОТА С ЛЕКСИЧЕСКИМ МАТЕРИАЛОМ

Формы СР с лексическим материалом:

- составление собственного словаря в отдельной тетради;
- составление списка незнакомых слов и словосочетаний по учебным и индивидуальным текстам, по определѐнным темам;
- анализ отдельных слов для лучшего понимания их значения;
- подбор синонимов к активной лексике учебных текстов;
- подбор антонимов к активной лексике учебных текстов;
- составление таблиц словообразовательных моделей.

Формы контроля СР с лексическим материалом:

фронтальный устный опрос лексики на занятиях;

выборочный индивидуальный устный опрос лексики на занятиях;

словарный диктант (с английского языка на русский, с русского языка на английский);

проверка устных лексических заданий и упражнений на занятиях;

проверка письменных лексических заданий и упражнений преподавателем

Методические указания по самостоятельной работе с лексикой:

При составлении списка слов и словосочетаний по какой-либо теме (тексту), при оформлении лексической картотеки или личной тетради- словаря вы должны выписывать из англо-русского словаря лексические единицы в их исходной форме, то есть:

имена существительные – в именительном падеже единственного числа (целесообразно также указать форму множественного числа, например: shelf - shelves, man - men, text – texts;

глаголы – в инфинитиве (целесообразно указать и другие основные формы глагола – Past и Past Participle, например: teach – taught – taught, read – read – read и т.д.).

Заучивать лексику необходимо с помощью двустороннего перевода (с английского языка – на русский, с русского языка – на английский) с использованием разных способов оформления лексики (списка слов, тетради-словаря, картотеки).

Для закрепления лексики целесообразно использовать примеры употребления слов и словосочетаний в предложениях, а также словообразовательные и семантические связи заучиваемых слов (однокоренные слова, синонимы, антонимы).

Для формирования активного и пассивного словаря необходимо освоение наиболее продуктивных словообразовательных моделей английского языка.

РАБОТА СО СЛОВАРЕМ

Формы СР со словарем:

поиск заданных слов в словаре;

определение форм единственного и множественного числа существительных;

выбор нужных значений многозначных слов;

поиск нужного значения слов из числа грамматических омонимов;

поиск значения глагола по одной из глагольных форм.

Формы контроля СР со словарем:

устная проверка домашних заданий на занятиях;

проверка заданий в тетрадях;

контрольные задания по отдельным формам СР в аудитории (в тетради или на доске);

перевод предложений, абзацев, текстов с использованием методик поиска слов и их значений в словаре.

Методические указания по самостоятельной работе со словарем:

При поиске слова в словаре необходимо следить за точным совпадением графического оформления искомого и найденного слова, в противном случае перевод будет неправильный (ср. plague - бедствие, plaque - тарелка; beside – рядом, besides – кроме того; desert – пустыня, dessert – десерт; personal – личный, personnel – персонал).

Многие слова являются многозначными, т.е. имеют несколько значений, поэтому при поиске значения слова в словаре необходимо читать всю словарную статью и выбирать для перевода то значение, которое подходит в контекст предложения (текста).

Сравните предложения:

а) Red Square is one of the biggest squares in Europe.

б) You must bring this number to a square. 13

в) If you want to get to this supermarket you must pass two squares.

г) He broke squares.

Изучение всей словарной статьи о существительном square и сопоставление данных словаря с переводимыми предложениями показывает, что в предложении а) существительное Square имеет значение «площадь» («Красная площадь - одна из самых больших площадей в Европе»), в предложении б) – «квадрат» («Вы должны возвести это число в квадрат»), а в предложении в) - «квартал» - («Если Вы хотите добраться до этого супермаркета, Вам нужно пройти два квартала»); в предложении

д) употребляется выражение ―brake squares‖ – «нарушать установленный порядок» («Он нарушил установленный порядок»).

При поиске в словаре значения слова в ряде случаев необходимо принимать во внимание грамматическую функцию слова в предложении, так как некоторые слова выполняют различные грамматические функции и в зависимости от этого переводятся по-разному.

Сравните:

а) The work is done = Работа сделана (work выполняет функцию подлежащего);

б) They work in a big company = Они работают в большой компании (work – выполняет функцию сказуемого).

При поиске значения глагола в словаре следует иметь в виду, что глаголы указаны в словаре в неопределенной форме (Infinitive) – sleep, choose, like, bring, в то время как в предложении (тексте) они функционируют в разных временах, в разных грамматических конструкциях. Алгоритм поиска глагола зависит от его принадлежности к классу правильных или неправильных глаголов. Отличие правильных глаголов от неправильных заключается в том, что правильные глаголы образуют форму Past Indefinite и Past Participle при помощи прибавления окончания -ed к инфинитиву.

Present Indefinite Past Indefinite Past Participle

to look looked looked

to smile smiled smiled

Неправильные глаголы образуют Past Indefinite и Past Participle другими способами: - путем изменения корневых гласных формы инфинитива Present Indefinite Past Indefinite Past Participle

to begin began begun

to speak spoke spoken

путѐм изменения корневых гласных и прибавления окончания к форме инфинитива Present Indefinite Past Indefinite Past Participle

to write wrote written

to give gave given

путѐм изменения конечных согласных формы инфинитива Present Indefinite Past Indefinite Past Participle

to send sent sent

to build built built

у некоторых неправильных глаголов все три формы совпадают Present Indefinite Past Indefinite Past Participle

РАБОТА С ТЕКСТОМ

Формы СР с текстом:

анализ лексического и грамматического наполнения текста;

устный перевод текстов небольшого объема (до 1000 печатных знаков) по краткосрочным заданиям;

письменный перевод текстов небольшого объема (до 1000 печатных знаков) по краткосрочным заданиям;

устный перевод текстов по долгосрочным заданиям;

изложение содержания текстов большого объема на русском и иностранном языке (реферирование – на продвинутом этапе обучения).

Формы контроля СР с текстом:

устный опрос по переводу на занятиях;

проверка письменных работ по переводу или реферированию текстов;

устный опрос по реферированию текстов с последующим обсуждением;

контрольный устный (письменный) перевод текста на занятиях.

Методические указания по самостоятельной работе с текстом

Правильное понимание и осмысление прочитанного текста, извлечение информации, перевод текста базируются на навыках по анализу иноязычного текста, умений извлекать содержательную информацию из форм языка. При работе с текстом на английском языке вы должны руководствоваться следующими общими положениями:

Работу с текстом вы должны начать с чтения всего текста: прочитайте текст, обратите внимание на его заголовок, постарайтесь понять, о чем сообщает текст.

Затем приступите к работе на уровне отдельных предложений. Прочитайте предложение, определите его границы. Проанализируйте предложение синтаксически: определите, простое это предложение или сложное (сложносочиненное или сложноподчиненное), есть ли в предложении усложненные синтаксические конструкции (инфинитивные группы, инфинитивные обороты, причастные обороты).

Этапы работы с текстом.

1. Предтекстовый этап.

Задачи на этом этапе – дифференциация языковых единиц и речевых образцов, их узнавание в тексте, языковая догадка.

Примерные задания для данного этапа:

прочтите заголовок и скажите, о чем (о ком) будет идти речь в тексте;

ознакомьтесь с новыми словами и словосочетаниями (если таковые даны к тексту с переводом); не читая текст, скажите, о чем может идти в нем речь;

прочитайте и выпишите слова, обозначающие (дается русский эквивалент);

выберите из текста слова, относящиеся к изучаемой теме;

найдите в тексте незнакомые слова.

2. Текстовый этап.

Данный этап предполагает использование различных приемов извлечения информации и трансформации структуры и языкового материала текста.

Примерные задания для данного этапа

прочтите текст;

выделите слова (словосочетания или предложения), которые несут важную (ключевую информацию);

выпишите или подчеркните основные имена (термины, определения, обозначения);

замените существительное местоимением по образцу;

сформулируйте ключевую мысль каждого абзаца;

отметьте слово (словосочетание), которое лучше всего передает содержание текста (части текста).

3. Послетекстовый этап.

Этот этап ориентирован на выявление основных элементов содержания текста.

Примерные задания для данного этапа:

озаглавьте текст;

прочтите вслух предложения, которые поясняют название текста;

найдите в тексте предложения для описания

подтвердите (опровергните) словами из текста следующую мысль ответьте на вопрос;

составьте план текста;

выпишите ключевые слова, необходимые для пересказа текста;

перескажите текст, опираясь на план;

перескажите текст, опираясь на ключевые слова.

РАБОТА ПО СОСТАВЛЕНИЮ ИНДИВИДУАЛЬНОГО АНГЛО-РУССКОГО ТЕРМИНОЛОГИЧЕСКОГО (ТЕМАТИЧЕСКОГО) СЛОВАРЯ

Общие понятия о терминологических словарях:

Терминологические словари, как правило, бывают алфавитными и переводными; они содержат научную,

техническую или другую терминологию. Отраслевые терминологические словари включают в себя информацию, отражающую интересы определенной специальности или области знания.

Термин – это специальное слово (словосочетание), принятое в профессиональной деятельности и употребляющееся в особых условиях. Основными признаками термина являются:

а) специализированный характер значения;

б) принадлежность к определенной терминологической системе;

в) точная соотнесенность с понятием. Термины бывают «чистые», т.е. такие, которые имеют только специальное значение, и «смешанные», в которых специальные значения перекрещиваются с неспециальными. Однозначность термина (внутри своего терминологического поля) и точность выраженного им понятия являются особенностью, отличающей его от других слов.

Указания по составлению терминологического(тематического) мини-словаря

Приступайте к выполнению работы после прочтения всех пунктов.

Выберите словарь, текст или несколько текстов по изучаемой специальности (в зависимости от уровня владения английским языком).

Прочитайте тексты.

При чтении выделяйте слова, которые являются специальными терминами (т.е. относятся к языку вашей специальности). Например: **engineer, contract, cabtire cable, account.**

Выпишите или сразу прочитайте в программе Word выделенные термины на английском языке, нумеруя их. Если ключевое слово встречается в тексте в сочетании с разными словами и эти словосочетания также являются терминами, выписывайте их тоже.

Например: **bill** – *вексель, счет*; **bill of exchange –** *переводной вексель.*

Отсортируйте по алфавиту выписанные английские термины.

Найдите в англо-русском словаре, в составе которого есть и терминология вашей специальности, русские эквиваленты (перевод) английских терминов.

Напротив каждого английского термина вашего отсортированного списка выпишите его перевод.

Используйте рекомендуемый преподавателем список текстов и словарей.

Уточните требования к минимальному содержанию слов в вашем словаре в соответствии с вашим уровнем подготовки.

STUDYING RUSSIA

RUSSIA

Russia is one of the largest countries in the world. The territory of Russia lies in the eastern part of Europe and northern part of Asia.

Russia is washed by twelve seas and three oceans. The oceans are: the Arctic, the Atlantic and the Pacific. The seas are: the White Sea, the Barents Sea, the Okhotsk Sea, the Black Sea, the Baltic Sea and others.

Russia borders on many countries, such as Mongolia, China in the southeast, Finland and Norway in the northwest, and so on.

The land of Russia varies very much from forests to deserts, from high mountains to deep valleys. The main mountain chains are the Urals, the Caucasus and the Altai. There are a lot of great rivers and deep lakes on its territory. The longest rivers are the Volga in Europe and the Ob, the Yenisei and the Lena in Asia. The largest lakes are Ladoga and the Baikal. The Baikal is the deepest lake in the world and its water is the purest on earth.

The Russian Federation is rich in natural and mineral resources. It has deposits of oil, gas, coal, iron, gold and many others.

The current population of Russia is more than 140 million people. The European part of the country is densely peopled and most population live in cities and towns and their outskirts

The capital of the Russian Federation is Moscow, with population of about 10 million people.

Russia is a presidential republic. It is one of the leading powers in the world.

STATE SYSTEM OF RUSSIA

Russia is a presidential republic. The Head of the State in the country is the President. The government consists of three branches: legislative, executive and judicial. The President controls each of them.

The legislative power is exercised by the Federal Assembly. It consists of two chambers: the Council of Federation and the State Duma. Each chamber is headed by the Speaker. A bill may be

introduced in any chamber. A bill becomes a law if it is approved by both chambers and signed by the President. The President may veto the bill. He can make international treaties. The President may also appoint ministers; the Federal Assembly approves them. The members of the Federal Assembly are elected by the people for five years.

The executive power belongs to the Government, or the Cabinet of Ministers. The government is headed by the Prime Minister.

The judicial power belongs to the system of courts. It consists of the Constitutional Court, the Supreme Court and other courts

The national symbol of Russia is a white-blue-and-red banner. The coat-of-arms of the Russian Federation is the double-headed eagle.

MOSCOW

Moscow is the capital of Russia, its administrative, economic, political and educational center. It is one of Russia's major cities with the population of about 9 million people. Its total area is about 900 thousand square kilometers.

The city was founded by Prince Yuri Dolgoruky and was first mentioned in the chronicles in 1147. At that time it was a small frontier settlement. By the 15th century Moscow had grown into a wealthy city.

In the 16th century, under Ivan the Terrible, Moscow became the capital of the state of Muscow. In the 18th century Peter the Great transferred the capital to St. Petersburg, but Moscow remained the heart of Russia. That is why it became the main target of Napoleon's attack in 1812. During the war of 1812 three quarters of the city were destroyed by fire, but by the middle of the 19th century Moscow was completely rebuilt.

The present-day Moscow is the seat of the government of the Russian Federation. President of Russia lives and works here; government offices are located here, too. Moscow is a major industrial city. Its leading industries are engineering, chemical and light industries.

Moscow is known for its historical buildings, museums and art galleries, as well as for the famous Bolshoi, Maly and Art theatres. There are more than 80 museums in Moscow, among them the unique

Pushkin Museum of Fine Arts and the State Tretyakov Gallery, the Andrey Rublyov Museum of Early Russian Art and many others.

Moscow is a city of science and learning. There are over 80 higher education institutions in the city, including a number of universities.

EDUCATION IN RUSSIA

Every citizen of Russia has the right to education. This right is guaranteed by the Constitution. It is not only a right but a duty too. Every boy or girl must get secondary education. They go to school at the age of six or seven and must stay there until they are 15-17 years old. At school pupils study academic subjects, such as Russian, Literature, Mathematics, History, Biology, a foreign language and others.

After finishing 9 grades of a secondary school young people continue their education in the 10th and the 11th form. They can also go to a vocational or technical school, where they study academic subjects and receive a profession. A college gives general knowledge in academic subjects and a profound knowledge in one or several subjects.

After finishing a secondary, vocational, technical school or a college, young people can start working or become a student of an academy, an institute or a university. Institutes and universities train specialists in different fields. A course at an academy, an institute or a university usually takes 4 years. If students study 4 years they get a Bachelor's degree. If they study for 6 years they become masters. Many universities have evening and correspondence departments. They give their students an opportunity to study without leaving their jobs. Institutes, academies and universities usually have postgraduate courses, which give candidate or doctoral degrees.

Education in the country is free at most schools. There are some private primary and secondary schools where pupils have to pay for their studies. Students of institutes, academies and universities get scholarships. At many higher educational institutions there are also departments where students have to pay for their education.

WELCOME TO THE UNITED KINGDOM

THE UNITED KINGDOM

The United Kingdom of Great Britain and Northern Ireland is situated on the British Isles. The British Isles consist of two large islands, Great Britain and Ireland, and about five thousands small islands. Their total area is over 244 000 square kilometers.

The United Kingdom is one of the world's smallest countries. Its population is over 57 million. About 80 percent of the population is urban.

The United Kingdom is made up of four countries: England, Wales, Scotland and Northern Ireland. Their capitals are London, Cardiff, Edinburgh and Belfast respectively. Great Britain consists of England, Scotland and Wales and does not include Northern Ireland. But in everyday speech "Great Britain" is used in the meaning of the "United Kingdom of Great Britain and Northern Ireland". The capital of the UK is London.

The British Isles are separated from the Continent by the North Sea, the English Channel and the Strait of Dover. The western coast of Great Britain is washed by the Atlantic Ocean and the Irish Sea.

The surface of the British Isles varies very much. The north of Scotland is mountainous and is called Highlands. The south, which has beautiful valleys and plains, is called Lowlands. The north and west of England are mountainous, but the eastern, central and southeasten parts of England are a vast plain. Mountains are not very high. Ben Nevis in Scotland is the highest mountain (1,343-m). There are a lot of rivers in Great Britain, but they are not very long. The Severn is the longest river, while the Thames is the deepest and the most important one. The mountains, the Atlantic Ocean and the warm waters of the Gulf Stream influence the climate of the British Isles. It is mild the whole year round.

The UK is a highly developed industrial country. It produces and exports machinery, electronics, and textiles. One of the chief industries of the country is shipbuilding.

The UK is a constitutional monarchy with a parliament and the Queen as the Head of State.

UK POLITICAL SYSTEM

The United Kingdom of Great Britain and Northern Ireland is a constitutional monarchy. This means that Great Britain is governed by the Parliament and the Queen is the Head of the State.

The legislative power in the country is exercised by the Houses of Parliament. The British Parliament consists of two chambers, the House of Lords and the House of Commons. The House of Lords is composed of hereditary and life peers and peeresses. The members of the House of Commons are elected by the people. They are elected from the constituencies in England, Scotland, Wales and Northern Ireland. The House of Commons is the real governing body of the United Kingdom.

The executive power is exercised by the Prime Minister and his Cabinet. The government is usually formed by the political party which is supported by the majority in the House of Commons. The Prime Minister is the majority party leader and is appointed by the Queen. The Prime Minister chooses a team of ministers; twenty of the ministers are in the Cabinet.

The second largest party becomes the official opposition with its own leader and the Shadow Cabinet. The two leading parties in Great Britain are the Conservative Party (the Tories) and the Labour Party.

The judicial branch of the government determines common law and is independent of both the legislative and the executive branches.

There is no written constitution in Great Britain, only precedents and traditions.

LONDON

London is the capital of the United Kingdom, its economic, political and cultural center. It is one of the world's most important ports and one of the largest cities in the world. London with its suburbs has a population of about 11 million people.

London has been a capital for nearly a thousand years. Many of its ancient buildings still stand. The most famous of them are the Tower of London, where the crown jewels are kept, Westminster Abbey and St. Paul's Cathedral. Most visitors also want to see the

Houses of Parliament, Buckingham Palace (the Queen's home with its Changing of the Guards) and a lot of magnificent museums.

Once London was a small Roman town on the north bank of the Thames. Slowly it grew into one of the world's major cities.

Different areas of London seem like different cities. The West End is a rich man's world of shops, offices and theatres. The City of London is the district where most offices and banks are concentrated; the Royal Exchange and the Bank of England are here, too. The East End is the district where mostly working people live. The old port area is now called "Docklands". There are now new office buildings in Docklands, and thousands of new flats and houses.

By the day the whole of London is busy. At night, offices are quiet and empty, but the West End stays alive, because this is where Londoners come to enjoy themselves. There are two opera houses here, several concert halls and many theatres, as well as cinemas. In nearby Soho the pubs, restaurants and nightclubs are busy half the night.

Like all big cities, London has streets and concrete buildings, but it also has many big parks, full of trees, flowers and grass. In the middle of Hyde Park or Kensington Gardens you will think that you are in the country, miles away.

Many people live outside the center of London in the suburbs, and they travel to work in shops and offices by train, bus or underground ("The Tube").

BRITISH SCHOOLS

All British children must stay at school from the age of 5 until they are 16. Many of them stay longer and take final examinations when they are 17 or 18. Before 1965 all children of state schools had to go through special intelligence tests. There were different types of state secondary schools and at the age of 11 children went to different schools in accordance with the results of the tests.

State schools are divided into the following types:

Grammar schools. Children who go to grammar schools are usually those who show a preference for academic subjects, although many grammar schools now also have some technical courses.

Technical schools. Some children go to technical schools. Most courses there are either commercial or technical.

Modern schools. Boys and girls who are interested in working with their hands and learning in a practical way can go to a technical school and learn some trade.

Comprehensive schools. These schools usually combine all types of secondary education. They have physics, chemistry, biology laboratories, machine workshops for metal and woodwork and also geography, history and art departments, commercial and domestic courses.

There are also many schools, which the state does not control. They are private schools. They charge fees for educating children, and many of them are boarding schools, at which pupils live during the term time.

After leaving school many young people go to colleges of further education. Those who become students at Colleges of Technology (called "Techs") come from different schools at different ages between 15 and 17. The lectures at such colleges, each an hour long, start at 9.15 in the morning and end at 4.45 in the afternoon.

BRITIAN'S UNIVERSITIES

There are about 90 universities in Britain. They are divided into three types: the old universities (Oxford, Cambridge and Edinburgh Universities), the 19th century universities such as London and Manchester Universities, and the new universities. Some years ago there were also polytechnics. After, graduating from a polytechnic a student got a degree, but it was not a university degree. 31 former polytechnics were given university status in 1992.

Full courses of study offer the degree of Bachelor of Arts or Science. Most degree courses at universities last 3 years, language courses 4 years (including a year spent abroad). Medicine and dentistry courses are longer (5-7 years).

Students may receive grants from their Local Education Authority to help pay for books, accommodation, transport and food. This grant depends on the income of their parents.

Most students live away from home, in flats or halls of residence.

Students don't usually have a job during term time because the lessons called lectures, seminars, classes or tutorials (small groups), are full time. However, many students now have to work in the evenings.

University life is considered "an experience". The exams are competitive but the social life and living away from home are also important. The social life is excellent with a lot of clubs, parties, concerts, and bars.

There are not only universities in Britain but also colleges. Colleges offer courses in teacher training, courses in technology and some professions connected with medicine.

BRITISH CUISINE

Part 1

British cuisine has always been multicultural. In ancient times influenced by the Romans and in medieval times the French. When the Frankish Normans invaded, they brought with them the spices of the east: cinnamon, saffron, mace, nutmeg, pepper, ginger. Sugar came to England at that time, and was considered a spice h – rare and expensive. Before the arrival of cane sugars, honey and fruit juices were the only sweeteners. The few Medieval cookery books that remain record dishes that use every spice in the larder, and chefs across Europe saw their task to be the almost alchemical transformation of raw ingredients into something entirely new (for centuries the English aristocracy ate French food) which they felt distinguished them from the peasants.

During Victorian times good old British stodge mixed with exotic spices from all over the Empire. And today despite being part of Europe the British have kept up their links with the countries of the former British Empire, now united under the Commonwealth.

One of the benefits of having an empire is that they did learn quite a bit from the colonies. From East Asia (China) they adopted tea (and exported the habit to India), and from India they adopted curry-style spicing, they even developed a line of spicy sauces including ketchup, mint sauce, Worcestershire sauce and deviled sauce to indulge these tastes. Today it would be fair to say that curry has become a national dish.

Among English cakes and pastries, many are tied to the various religious holidays of the year. Hot Cross Buns are eaten on Good Friday, Simnel Cake is for Mothering Sunday, Plum Pudding for Christmas, and Twelfth Night Cake for Epiphany.

Unfortunately a great deal of damage was done to British cuisine during the two world wars. Britain is an island and supplies of many goods became short. The war effort used up goods and services and so less were left over for private people to consume. Ships importing food stuffs had to travel in convoys and so they could make fewer journeys. During the Second World War food rationing began in January 1940 and was lifted only gradually after the war.

The British tradition of stews, pies and breads, according to the taste buds of the rest of the world, went into terminal decline. What was best in England was only that which showed the influence of France, and so English food let itself become a gastronomic joke and the French art of Nouvell Cuisine was adopted.

Part 2

In the late 1980's, British cuisine started to look for a new direction. Disenchanted with the overblown (and under-nourished) Nouvelle Cuisine, chefs began to look a little closer to home for inspiration. Calling on a rich (and largely ignored) tradition, and utilising many diverse and interesting ingredients, the basis was formed for what is now known as modern British food. Game has enjoyed a resurgence in popularity although it always had a central role in the British diet, which reflects both the abundant richness of the forests and streams and an old aristocratic prejudice against butchered meats.

In London especially, one can not only experiment with the best of British, but the best of the world as there are many distinct ethnic cuisines to sample, Chinese, Indian, Italian and Greek restaurants are amongst the most popular.

Although some traditional dishes such as roast beef and Yorkshire pudding, Cornish pasties, steak and kidney pie, bread and butter pudding, treacle tart, spotted dick or fish and chips, remain popular, there has been a significant shift in eating habits in Britain. Rice and pasta have accounted for the decrease in potato consumption

and the consumption of meat has also fallen. Vegetable and salad oils have largely replaced the use of butter.

Roast beef is still the national culinary pride. It is called a "joint," and is served at midday on Sunday with roasted potatoes, Yorkshire pudding, two vegetables, a good strong horseradish, gravy, and mustard.

Today there is more emphasis on fine, fresh ingredients in the better restaurants and markets in the UK offer food items from all over the world. Salmon, Dover sole, exotic fruit, Norwegian prawns and New Zealand lamb are choice items. Wild fowl and game are other specialties on offer.

In fact fish is still important to the English diet, they are after all an island surrounded by some of the richest fishing areas of the world. Many species swim in the cold offshore waters: sole, haddock, hake, plaice, cod (the most popular choice for fish and chips), turbot, halibut, mullet and John Dory. Oily fishes also abound (mackerel, pilchards, and herring) as do crustaceans like lobster and oysters. Eel, also common, is cooked into a wonderful pie with lemon, parsley, and shallots, all topped with puff pastry.

HOLIDAYS IN GREAT BRITAIN

There are fewer public holidays in Great Britain than in other European countries. They are Christmas Day, Boxing Day, New Years Day, Good Friday, Easter Monday, May Day, Spring Bank Holiday, and Summer Bank Holiday. Public holidays in Britain are called bank holidays, because the banks as well as most of the offices and shops are closed.

The most favourite holiday is Christmas. Every year the people of Norway give the city of London a present. It's a big Christmas tree and it stands in the Trafalgar Square.

Before Christmas, groups of singers go from house to house. They collect money for charities and sing carols, traditional Christmas songs. Many churches hold a service on the Sunday before Christmas. The fun starts the night before, on the 24th of December. Traditionally this is the day when people decorate their trees. Children hang stockings at their beds, hoping that Father Christmas will come down the chimney during the night and fill them with toys and sweets.

Christmas is a family holiday. All the family usually meet for the big Christmas dinner of turkey and Christmas pudding. And everyone gives and receives presents. The 26th of December, Boxing Day, is an extra holiday after Christmas. It’s the time to visit friends and relatives.

New Years Day is not as favourable in Britain as Christmas. But in Scotland Hogmanay, New Year’s Eve is the biggest festival of the year.

Besides public holidays, there are some special festivals in Great Britain. One of them takes place on the 5th of November. On that day, in 1605, Guy Fawkes tried to blow up the Houses of Parliament and kill King James I. He didn't succeed. The King's men found the bomb, took Guy Fawkes to the Tower and cut off his head.

Since that day the British celebrate the 5th of November. They burn a dummy, made of straw and old clothes, in a bonfire and let off fireworks. This dummy is called a "guy" (like Guy Fawkes).

SIGHTSEEING IN GREAT BRITAIN

Part 1

Great Britain is a country of strong attraction for tourists. The charm of it lies in its variety of scenery: the finest combination of sea, high land and valleys, lakes and rivers, fields and meadows. They say «England is green throughout».

Englishmen like their parks and gardens. The art of gardening has a very old tradition in England. Their parks are pieces of the country left in the middle of town while the English country looks parklike.

Great Britain is the country with a long and exciting history and a rich cultural heritage. People from different corners of our planet go there to see Stonehenge, a relic of an ancient civilization, Loch Hess and its legendary monster, the Royal residence and numerous castles. The cities and towns of Great Britain — London, Glasgow, Edinburgh, Oxford and Cambridge and many others — present a lot of interest to foreigners.

Stratford-upon-Avon, where Shakespeare was born, is now one of the most popular tourist centres. People from all over the world come to see Shakespeare’s birthplace. There are a lot of relics in the town associated with Shakespeare and his immortal works: the

Grammar School where he studied, the church where he was buried, the Royal Shakespeare Theatre. The town is famous for its great Shakespeare festivals which are held annually from April to September. No other part of the country is so unmistakably English.

Only eight miles away from Stratford-upon-Avon there is another place which attracts a lot of visitors — the ancient town of Warwick dominated by one of the finest medieval castles in Great Britain. It contains an excellent collection of arms, armour and paintings.

Another popular tourist centre is the city of York which is unique in having evidence of occupation throughout the ages from Roman, Saxon and Viking times to the present day. York has a lot of world famous attractions offering something for everyone. It has the largest cathedral in Northern Europe which is 800 years old. The Viking Centre in York brings the visitors face to face with real characters from the city's Viking past. The National Railway Museum, the largest of its kind in the world, provides a vast collection of engines and Royal carriages.

Tourism is one of the most important industries in Scotland. Tourists from all over the world come to enjoy the beauty of Scottish scenery, to walk among heather-covered hills, to visit ancient historic castles, to eat Scottish salmon, to see Scotsmen in kilts playing bagpipes although only a few Scots wear kilts these days.

Part 2

Numerous historic and cultural places in Great Britain remind of the tremendous past of the country and its rich heritage and of course the most famous of them are concentrated in London, the capital of the country. London is one of the largest and one of the world's most enjoyable cities. It offers visitors a great variety of places of interest. It's a city of dream of everybody interested in English history and culture. What is it that attracts so many people to London? There are three things that make London the place of the greatest attraction to visitors: its architecture, its famous museums and galleries and, finally, the Royal traditions which are so thoroughly observed in the country.

London was founded by the Romans and is more than twenty centuries old. Its population is about eight million people. The most important parts of London are the City, the East End, the West End and Westminster. They are very different from each other.

Let us go sightseeing in London and visit the principal places of interest. We'll start our tour with the City, the oldest part of London, which is the commercial and financial centre of the country. The Bank of England and some of the richest companies in the world have their headquarters in the City. Two masterpieces — St. Paul's Cathedral and the Tower of London — are situated in the City. St. Paul's Cathedral, the greatest church of England, was built in the 17th century by Sir Christopher Wren. There are a lot of memorials in the cathedral including those to Wellington and Admiral Nelson. The Tower of London is associated with many important events in the English history. It used to be a royal palace and a political prison. Now it's a museum. The most popular sight in the Tower is the Jewel House in which the Crown jewels are on the display. The Tower is guarded by the Yeoman Warders popularly known as «Beefeaters».

And now we are in the West End which by right is considered to be the most beautiful part of London. The place of pilgrimage in the West End is Trafalgar Square. It was named so in memory of Admiral Nelson's victory at Trafalgar in 1805. There are usually a lot of visitors walking about the square and looking at Nelson's column and the fountains. The National Gallery which adjoins Trafalgar Square contains an outstanding collection of paintings. Not far from the National Gallery is the British Museum — the biggest museum in London. It's famous for its library and its priceless collections of ancient manuscripts, coins, sculptures and so on.

Now we'll go down Whitehall, the street where all important government offices are situated. It will take us to Westminster, the historic and official part of London. Buckingham Palace, the Queen's official London residence, is situated in Westminster. There one can see one of the most colourful ceremonies — the Changing of the Guard. The Houses of Parliament, called officially the Palace of Westminster, spread magnificently on the north bank of the Thames. Westminster Palace is the seat of the British Government. When the Parliament has a sitting, Union Jack, the national flag of the UK, is seen on the Victoria Tower. Opposite the Houses of Parliament is Westminster Abbey founded in 1050. It is the place where nearly all English kings and queens were crowned. Westminster Abbey is also famous for its Poet's Corner where many of the greatest English writers and poets are buried. It would be exciting to touch the gravestones and to read the epitaphs on the graves of the famous British people.

If you want to get a good idea of London you should also visit the East End. It used to be the poorer part of London, its industrial district. But over the recent years many parts of the East End have been rebuilt and renovated. The face of the district is changing,"much to the regret of the old residents of the East End who are proud to be called «cockneys» which means «londoners».

In the evening it would be nice to go to a quiet cafe off the beaten track and to talk to Londoners because the unique atmosphere, the character and the spirit of the city are created not only by its famous historic places but also by the people who live there.

A GLANCE AT AMERICA

THE UNITED STATES OF AMERICA

The United States of America are situated in the central part of the North American continent. Its western coast is washed by the Pacific Ocean and its eastern coast — by the Atlantic Ocean.

The total area of the USA is over nine million square kilometers.

The population of the USA is about 250 million people; most of the population lives in towns and cities.

The USA is a very large country, so it has several different climatic regions. The coldest regions are in the north and northeast. The south has a subtropical climate.

The United States is a land of rivers and lakes. The northern state of Minnesota is a land of 10,000 lakes. The longest rivers in the USA are the Mississippi, the Missouri and the Rio Grande. The highest mountains are the Rocky Mountains, the Cordillera and the Sierra Nevada.

The United States is rich in natural and mineral resources. It produces copper, oil, iron ore and coal. It is a highly developed industrial and agricultural country.

There are many big cities in the USA, such as New York, Chicago, Los Angeles, Philadelphia and others. The national capital is Washington, D.C. Its population is about 3.4 million. Washington was

built in the late eighteenth century as the center of government. It was named after George Washington.

The USA became the world leading country at the beginning of the twentieth century.

US GOVERNMENT

The USA is a presidential republic.

The legislative branch of the US Government, or the Congress, represents all of the American states. It consists of two parts: the House of Representatives and the Senate. Each state has two senators, who are elected every 6 years. A senator must be at least 30 years old, a citizen of the United States for 9 years, and live in the state she or he will represent. A representative must be at least 25 years old, a citizen for 7 years, and live in the state.

The job of the Congress is to make laws. The President can veto a bill. The Congress can pass the law anyway if it gets a two-thirds majority vote. The Congress can also declare war. The House of Representatives can also impeach the President. This means that the House can charge the President with a crime. In this case, the Senate will put the President on trial. The Senate votes to approve the justices that the President appoints to the Supreme Court.

The executive branch of the government puts the country's laws into effect. The President of the United States is a member of the executive branch. The President must be at least 35 years old, and be a natural citizen of the USA. In addition, he must have lived in the US for at least 14 years, and be a civilian. The President is elected every four years and cannot serve more than two terms. The Vice-President of the USA is a president of the Senate. When the President receives a bill from the Congress, he must sign it, and then the bill becomes a law. However, if he disagrees with the law, he can veto it. The president can also ask the Congress to declare war. He also appoints the justices to the Supreme Court. He must do his job according to the Constitution, or he may be impeached.

The judicial branch of the government is the system of courts in the United States. Its job is to enforce laws. The Supreme Court is the highest court in the country. It consists of 9 justices: one Chief Justice and 8 associate justices. The President appoints the justices, but the

Senate must approve them. The justices are appointed for life. The Supreme Court makes sure that people obey the laws. The Supreme Court can also decide if a law is constitutional, that is, if it is in agreement with the Constitution. The judicial branch works together with the legislative and executive branches to protect the Constitution and the rights of people.

WASHINGTON, D.C.

The United States is a federal union, which is made up of fifty states and one independent district — the District of Columbia. The District of Columbia is the territory of the national capital of the USA, Washington, with its own laws and regulations. Washington, D.C. is situated on both banks of the Potomac river, between the two states, Maryland and Virginia. This place was chosen by the first American President George Washington. The plot of land of a hundred square miles was bought from private owners by the state. In 1790 George Washington laid the corner-stone of the Capitol where the Congress sits.

The place was called the District of Columbia in honour of Columbus, the discoverer of America. The capital got the name of Washington after the name of its founder. Washington has been the federal capital since 1800.

Washington is sometimes called the heart of America. It is the place where the federal government works and where each President of the United States lives. Washington is smaller in size than the largest cities of the USA, such as New York, Chicago, Detroit or Los Angeles.

The population of Washington is about 11 million people.

The buildings in Washington are not very tall because no building must be taller than the Capitol. But in political sense Washington is the center of the country and the most important city of the United States.

SCHOOL EDUCATION IN THE USA

The federal government pays little attention to school education in the USA. There is neither a uniform school system in the USA, nor

a uniform curriculum. Each state has its own system of schools. But there are some common features in the organization of school education in the country.

Schools in the USA can be divided into state, or public schools, and private schools. State schools are free, and private schools are fee-paying.

Elementary and secondary schools consist of twelve grades. Classes last for about ten months a year, five days a week and five hours a day. At elementary school English, mathematics, science, social studies, music, sports and other subjects are taught.

Elementary education begins at the age of six, when a child goes to the first grade. Secondary education is offered at high schools. At the age of 14 pupils go to junior high school. At the age of sixteen children leave junior high school and may continue their education at the upper grades of high school.

Besides giving general education some high schools teach some other subjects. Students choose these subjects if they want to enter colleges or universities or hope to find jobs in industry or agriculture. Many schools include classes teaching basic computer skills.

A growing number of young people go to colleges or universities. Nevertheless, many students of high school don't finish it. One per cent of American citizens from the age of 14 can neither read nor write.

HIGHER EDUCATIONIN THE USA

In the United States, a student who has finished high school may want to continue in higher education. There are several ways to do it: universities, colleges, community colleges, and technical or vocational schools.

A university in the United States usually has several different colleges in it. Each has a special subject area. There may be a college of liberal arts where humanities, social sciences, natural sciences and mathematics are taught. There may be a college of education and a college of business. A program for undergraduates usually takes four years. University students get an undergraduate degree in the arts or sciences. If they complete a course of study they get Bachelor of Arts or Science degree. Students may leave the university at this time.

They may also go on for a graduate or professional degree. The university always has programs for graduate and professional study in many subjects.

The university may get money from several different sources. A publicly funded university gets some money from the state government. A privately funded university gets money only from private sources. Or the university may be funded by a religious group.

College students usually spend four years at school, too. A college does not have graduate or professional programs. If college student completes a course of study in arts or science, he or she gets Bachelor of Arts or Science degree. If college students want to continue for a graduate or professional degree they have to go to University. The college is usually funded in one of the three ways already described.

The program of study in the community college usually lasts two years. Not all of the subjects taught there are the usual school subjects. The community college may give course in the regular academic subjects or subjects like dental technology, sewing and other non-academic subjects. Not all students of the community college have a high school diploma. They may then go to a college for two more years to get the bachelor's degree. Community colleges are nearly always publicly funded. The technical or vocational school has only job training, it has no academic program. Students may have a high school diploma, or not. Programs may take from six months to two years and more. The technical or vocational school gives training for work in areas such as electronics, carpentry and others.

FOOD AND DRINK IN THE USA

The diversity of food enjoyed in the USA reflects the many cultures that make up the country's population. Restaurants and food stores offer dishes and ingredients from all over the world, including countless variations on European, Central and South American, Caribbean, Indian, Asian, African, and Middle Eastern cuisine. The USA also has its own national fare, which continues to evolve, highlighting the country’s growing diversity.

Traditional Cuisine

What is known as traditional American cuisine grew out of the influence of the early European settlers and from the abundance of

native foods available on the North American continent. A traditional meal consists of meat and potatoes, often accompanied by vegetables and a dessert. This traditional dinner is still served in many American homes and restaurants.

Regional differences have created distinct flavors and styles, so that the basic meat-and-potatoes dinner will often have local flair. The hamburger – a grilled ground beef patty on a bun – is available almost everywhere, along with French fries. Even the hamburger can be distinguished by regional toppings. Avocados, for example, is a typical "California topping", while in Buffalo, NY, the local specialty is hot barbecue sauce. Potatoes, if not French fried, might be baked, twice-baked, hash-browned, mashed or turned into a cold salad with mayonnaise dressing.

The accompanying vegetables also depend on the region. Favorites include collard and mustard greens, corn, green beans, peas and kale.

The saying "as American as apple pie" reflects the popularity and universal availability of the dessert. However, many types of fruit pies, cakes, cookies and ice cream compete for the title of the USA's favorite dessert.

Meals

The three main meals in the US diet are breakfast, lunch and dinner.

Dinner, also called supper, is generally the main meal of the day. It is usually served between 17:00 and 20:00, depending on work and school schedules, and often involves the entire family sitting down to eat together.

At work and in schools, lunch-breaks usually occur some time from 11:00-13:00. It often comprises lighter fare, such as sandwiches, salads or last night's leftovers carried to work or school in a brown bag. Restaurants in business districts often serve lunch menus geared specifically toward feeding business people.

Breakfast is the first meal of the day and is the one most often grabbed on the run. Eggs, cereals, bagels, toast, juice and, of course, coffee usually feature on the menu. Regionally, there are also many differences in typical breakfast menus that reflect each area's cultures and traditions.

Brunch is a weekend meal served from late morning to early afternoon that combines breakfast and lunch. For many, brunches are a way to mark a special occasion and many restaurants have special brunch menus for this purpose.

HOLIDAYS IN THE USA

American holidays are strikingly different in origin and show surprising similarities in the manner of their celebration. No matter what the holiday's origin is, they all seem to be the same thing. A holiday has simply become, for most Americans, a day off from work, though some (for example, Thanksgiving and Christmas) retain some individuality.

The major holidays in the USA are:

New Year's Day, January, 1st:

People stay awake until after midnight on December 31st to "watch the Old Year out and the New Year in." Many parties are given on this night. Theatres, night clubs, restaurants are crowded. When midnight comes, they greet the New Year: people gather in the streets of big cities, they ring bells, blow whistles and automobile horns, some shoot off guns and firecrackers.

Valentine's Day, February, 14th:

It is not a national holiday. Banks and offices do not close, but it is a happy little festival in honour of St Valentine, patron of sweethearts and lovers. It is widely celebrated among people of all ages by the exchange of "valentines." A "valentine" may mean a special greeting card or a little present. The greeting cards are often coloured red, have red trimmings and pictures of hearts.

Washington's Birthday, February, 22d:

In addition to commemorating the birth of the United States' first President, it's a great day for shoppers. The department stores of Washington, DC, stated a national tradition of sales marked by unusual bargains. It is not a national holiday. Many schools, offices and banks close for this day, some stay open. The US Congress observes the birthday of George Washington with speeches and readings from his works.

Easter:

Easter is in memory of the Resurrection of Jesus Christ. It falls on the first Sunday after the first full moon between March, 22, and April, 25. The 40 days before Easter are called Lent. Just before Easter, schools and colleges usually close. Students have a week or ten days of spring vacation. Easter is a church holiday, and many churches have an outdoor sunrise service. People give each other presents of eggs which are the symbol of new life. There is a popular belief that wearing three new things on Easter will bring good luck throughout the year.

Memorial Day, May, 30th:

It is a national holiday. Schools, banks and offices close for the day. On that day, Americans honour the servicemen who gave their lives in past wars. Schools, clubs and churches decorate the cemeteries. They put up the flags on the graves of the army, navy and airmen. They hold memorial services in churches, halls, parks and cemeteries. In addition to solemn services Memorial Day is often marked by other, more joyful ceremonies: colourful parades, sports competitions.

Independence Day, July, 4th:

On this day, in 1776, America signed the Declaration of Independence. It is a national public holiday celebrated with fireworks and speeches praising "Americanism, democracy, free enterprise".

Labor Day, the first Monday in September:

It is a holiday of recreation. It marks the end of summer and the beginning of autumn. Vacation time is over. Resorts, camps and beaches close... Parents go to summer camps and take their children back home.

Halloween, October, 31st:

Halloween is the day or evening before All Saints' Day. Halloween customs date back to a time when people believed in devils, witches and ghosts. They thought that these evil spirits could do all kinds of damage to property. Some people tried to ward off witches by painting magic signs on their barns. Others tried to scare them away by nailing a piece of iron, such as a horseshoe, over the door. Now most people do not believe in evil spirits. On this day they just have a nice holiday. Children dress up as ghosts and witches and go out into the streets to beg. They go from house to house and say: "Trick or treat!", meaning "Give me a treat or I'll play a trick on you".

People give them candy, cookies and apples. A favourite custom is to make a jack-o'-lantem. Children scrape out a pumpkin and cut the outlines of eyes, nose and mouth in its side. They light a candle inside the pumpkin to scare their friends. This custom refers to a man named Jack who still wanders around the earth lighting his way with a pumpkin lantern.

Veterans Day:

On this day, the radio and television broadcast services held at the National Cemetery in Arlington. High officials come from Washington to attend these services. They place a wreath of flowers at the tomb of the Unknown Soldier. All stand in silence for a few minutes at eleven o'clock to honour the memory of the servicemen killed in the two World Wars.

Thanksgiving Day, the fourth Thursday in November:

In the USA it is a national holiday. It was first celebrated in 1621 by the Pilgrim Fathers after their first good harvest. Thanksgiving is a family day, for it is customary for all members of the family to gather at the home of their parents. The family eats a large traditional dinner, usually with turkey, cranberry sauce and pumpkin pie.

Christmas Day, December, 25th:

It is usually a one-day official holiday, but it is preceded and followed by festive parties, and marked by special church services, gift-giving and feasting. Christmas is a family holiday. Schools and colleges close between Christmas and New-Year's Day. People stay at home and spend the time with their families. Everybody tries to come home for Christmas. People send cards or Christmas greetings to family and friends away from home. Every family tries to have a Christmas tree, which is beautifully decorated. Santa Claus comes from the North Pole in his sleigh, dressed in red cap and jacket, entering the house from chimney. He is a merry and fat individual. He has gifts of whatever kind you may wish for — nothing is too fabulous nor too trivial for him to provide.

READING FOR SPECIFIC PURPOSES

AGRICULTURE

Agriculture, also called farming or husbandry, is the cultivation of animals, plants, fungi, and other life forms for food, fiber, biofuel, medicinals and other products used to sustain and enhance human life. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. However, all farming generally relies on techniques to expand and maintain the lands that are suitable for raising domesticated species. For plants, this usually requires some form of irrigation, although there are methods of dryland farming. Livestock are raised in a combination of grassland-based and landless systems, in an industry that covers almost one-third of the world's ice- and water-free area. In the developed world, industrial agriculture based on large-scale monoculture has become the dominant system of modern farming, although there is growing support for sustainable agriculture, including permaculture and organic agriculture.

Until the Industrial Revolution, the vast majority of the human population labored in agriculture. Pre-industrial agriculture was typically subsistence agriculture/self-sufficiency in which farmers raised most of their crops for their own consumption instead of cash crops for trade. A remarkable shift in agricultural practices has occurred over the past century in response to new technologies, and the development of world markets. This also has led to technological improvements in agricultural techniques, such as the Haber-Bosch method for synthesizing ammonium nitrate which made the traditional practice of recycling nutrients with crop rotation and animal manure less important.

Modern agronomy, plant breeding, agrochemicals such as pesticides and fertilizers, and technological improvements have sharply increased yields from cultivation, but at the same time have caused widespread ecological damage and negative human health ef-

fects. Selective breeding and modern practices in animal husbandry have similarly increased the output of meat, but have raised concerns about animal welfare and the health effects of the antibiotics, growth hormones, and other chemicals commonly used in industrial meat production. Genetically modified organisms are an increasing component of agriculture, although they are banned in several countries. Agricultural food production and water management are increasingly becoming global issues that are fostering debate on a number of fronts. Significant degradation of land and water resources, including the depletion of aquifers, has been observed in recent decades, and the effects of global warming on agriculture and of agriculture on global warming are still not fully understood.

The major agricultural products can be broadly grouped into foods, fibers, fuels, and raw materials. Specific foods include cereals (grains), vegetables, fruits, oils, meatsand spices. Fibers include cotton, wool, hemp, silk and flax. Raw materials include lumber and bamboo. Other useful materials are produced by plants, such as resins, dyes, drugs, perfumes, biofuels and ornamental products such as cut flowers and nursery plants. Over one third of the world's workers are employed in agriculture, second only to the services sector, although the percentages of agricultural workers in developed countries has decreased significantly over the past several centuries.

BRITISH AGRICULTURE

Great Britain is a highly developed industrial country. In spite of the mild climate favourable for agriculture only 20 per cent of the population live in the country-side and only 7 per cent of the population are engaged in farming.

British agriculture depends on climatic conditions and types of soil. About a third of British agricultural land is arable and the rest are pastures and meadows. The agricultural area is toward the English Channel and the continent of Europe.

The climate of Great Britain is mild and damp. The temperature seldom exceeds 30° C or falls below zero. Thus farmers work in the fields all the year round. The cool and mild climate and sufficient rainfalls are favourable for growing all kinds of crops and for animal husbandry.

The soil in many parts of Highland Britain is thin and poor. Sheep-farming and cattle breeding are typical of this zone. Lowland Britain is a rich area with fertile soil. Dairy breeding and poultry farming, horticulture and arable (crop) farming are wide spread here.

Wheat, oats and barley are the main grain crops, sugar beets and potatoes are the chief root crops. The fruits grown are apples, pears, plums, cherries and berries. The main agricultural products of Britain are wheat, barley, oats, potatoes, milk and different kinds of meat.

The types of farms are different in different soil and climatic areas. The greater part of the land in Great Britain belongs to landowners. Small traditional farms are usually mixed farms on which farmers both grow crops and keep farm animals. But now small farms are gradually disappearing because they cannot compete with modern big industrial farms.

Most of the British farms are highly mechanized. Farmers use tractors, different planting machines and combine-harvesters. Mineral fertilizers and chemical means of plant protection are applied on a large scale. British farmers are very skilled and active in their work. They produce enough food required by the vast industrial population. Only some part of the Britain's food supply, such as tea, coffee and exotic fruits, is imported.

USA AGRICULTURE

Nearly 400 years ago European colonists came to America. The colonists began to settle. They cleared the land and transformed forests into croplands and pastures. The settlers lived in a group of houses around a central field. Here the village cattle was grazed.

In 1862 the government gave land away free. A settler had to clear it, build a house and live there for at least five years. There appeared family farms. Over time, farming methods improved and farming areas increased. Today the average farm in the USA comprises 187 ha (462 acres). American farms became more efficient. Many farms adopted new technologies. Computers helped them to improve productivity and cut costs. In the 1990s American farmers invested more than $ 400 billion in land, livestock, buildings and equipment. American consumers pay less for their food than the

people of many other industrial countries. By the mid-1970s a single farmer could grow enough food to feed himself, 45 other Americans and 8 foreigners.

Most of the farms in the USA are family farms. Only 3 percent of them are led by corporations that are owned by families. People who have small pieces of land cannot invest in the modern equipment. Often they sell their land to other farmers. There are tenant farmers who rent this land for cash or give the owner a part of the crops they grow. Owners of large farms hire seasonal workers. Many of these seasonal workers travel from farm to farm. They stay only for the period of picking crops. They are known as migrant workers.

The Northeast region does not have large areas of good land. But you can find dairy and poultry farms in several areas. Maine is famous for potatoes.

The Great Lakes region is also an important area for farming. Corn, wheat and dairy products are the most important agricultural items. Farmers often rotate soybeans – that is, planting corn in a field one year and soybeans the next. The region has enough rainfall, which is very important for hay, grown to feed dairy cattle. Wisconsin is the most important dairy state in the region.

The South is famous for tobacco. The moist, warm climate contributes to the extensive growth of tobacco in Virginia, North Carolina and South Carolina. Cotton is another important crop for southern farmers, especially in Arkansas and Mississippi. Peanuts are grown in Georgia, citrus fruits and vegetables in Florida, Soybeans is an important crop in Arkansas.

The Great Plains region is considered the «American breadbasket». It yields great quantities of crops, especially wheat. Wheat is important in Kansas, Minnesota, Nebraska, and the Dakotas. Iowa receives more rainfall than the states in the west, so corn is grown instead of wheat. It is the leading state in the USA in corn production. Texas leads the country in the number of cattle and sheep. Here vegetables and citrus fruit, wheat and cotton are grown too.

The Rocky Mountains region lacks water. So many farmers raise livestock. The cattle and sheep require a lot of land to graze. Many of the ranches are very large. Their sizes can be over 900 hectares.

California leads the Pacific region in farming. It is the leading grower of fruits and vegetables. The farms produce cattle, dairy

products, cotton, grapes, tomatoes, and citrus fruits. In Washington cherries and apples are major fruits. Farms in Hawaii grow sugarcane and pineapples.

Now the US agriculture is a big business and is a part of the country's economy.

Agrobusiness includes farmer cooperatives, rural banks, shippers of farm products, firms that manufacture farm equipment, food-processing industries and many other businesses. American agriculture exports its crops to Europe, Asia, Africa and Latin America. The United States produces half of the world's soybeans and corn for grain, and from 10 to 25 percent of the world's cotton, wheat, tobacco and vegetable oils.

AGRICULTURAL ENGENEERING

Agricultural engineering is the engineering discipline that applies engineering science and technology to agricultural production and processing. Agricultural engineering combines the disciplines of mechanical, civil, electrical and chemical engineering principles with a knowledge of agricultural principles.

•design of agricultural machinery, equipment, and agricultural structures

•internal combustion engines as applied to agricultural machinery

•agricultural resource management (including land use and water use)

•water management, conservation, and storage for crop irrigation and livestock production

•surveying and land profiling

•climatology and atmospheric science

•soil management and conservation, including erosion and erosion control

•seeding, tillage, harvesting, and processing of crops

•livestock production, including poultry, fish, and dairy animals

•waste management, including animal waste, agricultural residues, and fertilizer runoff

•food engineering and the processing of agricultural products

•basic principles of circuit analysis, as applied to electrical motors

•physical and chemical properties of materials used in, or produced by, agricultural production

•bioresource engineering, which uses machines on the molecular level to help the environment.

•Design of experiments related to crop and animal production

The first curriculum in Agricultural Engineering was established at Iowa State University by Professor J. B. Davidson in 1903. The American Society of Agricultural Engineers, now known as the American Society of Agricultural and Biological Engineers, was founded in 1907. Agricultural engineering has led to mono-cultural farming, paying specialized attention to one type of crop. Genetically engineered crops have skyrocketed to 145 million acres world wide by 2002, most of which are corn and soy that feed the livestock that humans consume. Scientists have barely scratched the surface of agricultural engineering; it is a living science experiment still in progress.

Agricultural engineers

Agricultural engineers may perform tasks as planning, supervising and managing the building of dairy effluent schemes, irrigation, drainage, flood and water control systems, performing environmental impact assess-ments, agricultural product processing and interpret research results and implement relevant practices. A large percentage of agricultural engineers work in academia or for government agencies such as the United States Department of Agriculture or state agricultural exten-sion services. Some are consultants, employed by private engineering firms, while others work in industry, for manufacturers of agricultural machinery, equipment, processing technology, and structures for housing livestock and storing crops. Agricultural engineers work in production, sales, management, research and development, or applied science.

In the United Kingdom the term Agricultural Engineer is often also used to describe a person that repairs or modifies agricultural equipment

AGRICULTURE

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PLANTS

A plant is a living organism. It is made up of different parts, each of which has a particular purpose, or specialized function. If one part of the plant is not functioning properly the whole plant will suffer. But we may cut flowers off the plant or prune the roots. Such damage is only temporary and so the plant will continue to grow.

The basic parts of a plant are the root system, which is below the ground, and the shoot system above. The root of a plant has two main functions. It takes in, or absorbs, water and minerals from the soil through the root hairs, which are single cells near the tip of each root. The other main function of the root is to hold, or anchor, the plant firmly in position in the soil.

Plants such as sugar beet and carrots are able to store food in their roots. In this way they can keep growing for more than one season. In addition, plants such as clover and lucerne, known as 'legumes', have special bacteria which live on the roots. These simple forms of life take nitrogen out of the air which is in the soil. Such

leguminous plants are usually ploughed under the soil. By doing this the soil is made more fertile.

The shoot system above the ground consists of the stem, the leaves, flowers and fruit. One of the functions of the stem is to support the plant. Another important function is to enable water and minerals to pass up from the roots to the leaves and flowers. Organic materials such as sugar travel down the stem to the roots. The leaves grow out of the side of the stem. Their main job is to make food for the plant by the process known as photosynthesis. For this process sunlight is necessary. Water from the soil and carbon dioxide from the air are converted into sugars and other carbohydrates. During the process oxygen is formed and released into the air. The flower contains the reproductive organs of the plant. The stamens produce the male sex cells, or spermatic, which are carried in the pollen grains. The carpel produces the female sex cells, or ovules. The fruit, the ripened ovary of the flower, encloses the seeds and protects them while they are developing. The seed itself consists of an embryo and foodstore. The embryo is the part which will develop into another plant and the foodstore is necessary to provide nourishment for the young plant while it is growing.

THE LIFE CYCLE OF AN ANNUAL PLANT

The life cycle of a typical annual plant can be divided into several stages. The first stage is germination. Seeds remain dormant, or in a resting state, if they are kept cool and dry. When the amount of moisture and the temperature level are right, the seeds germinate and start growing.

Certain conditions are necessary for this to happen. An essential condition is that the seeds must be alive. Sometimes seeds are dried at a temperature which is too high. This has two effects: the water content in the seeds is reduced too much, and certain essential proteins are destroyed. As a result, the seeds die.

Other conditions for germination concern the amount of moisture in the soil. If dry seeds are planted in a dry soil, they will not germinate until it rains. On the other hand, if there is too much water in the soil, the seeds will not germinate either. This is because wet soils remain cold for a longer period of time than drier, well-drained soils. If the soil is too cold germination will not occur. An additional

reason for seeds not germinating is that badly drained soils may lack sufficient oxygen. Dormant seeds require very little oxygen in order to stay alive, but when they start to germinate the require more.

In the first stage of germination the primary root, or radicle, emerges. Then the stem pushes its way upward until it appears above the surface of the soil. At the same time the root system grows downward, and begins to spread through the soil. In the early stages of development the seedling depends entirely on the foodstore in the seed but as soon as the first leaves are produced, it is able to manufacture food for itself. The seedling begins photosynthesis.

Next, the plant enters the stage of rapid growth. In this stage of the life cycle, the plant begins to grow to its full size. When it is mature enough, it flowers, and when this happens pollination and fertilization are ready to take place. In the process of pollination the pollen is carried by wind or insects from the stamens to the stigma of the carpel. It germinates on the stigma and grows down the style into the ovary, where fertilization takes place.

SOIL

Soil is a residue composed of two main ingredients: mineral material and organic material. Organic material originates from dead plants and animals and materials other than this are derived from rocks of various kinds.

These rocks are broken down into small particles by mechanical disintegration and chemical decomposition. This breaking down process, known as weathering may thus be both physical and chemical.

When weathering processes are largely physical - by heat or wind, for instance - the composition of the soil is very similar to that of the parent rock. In arid regions weathering is mostly by physical means. But in hut regions chemical processes of weathering are equally important. In such regions rock particles are affected by water which may contain carbonic or other weak acids. These acids dissolve some of the particles in the rocks. The mineral material that is left behind is insoluble. Consequently, the insoluble mineral residues in the soils have less resemblance to the original rocks. There are larger amounts of organic matter in the soil, too.

The process of soil formation results in the development of the soil profile. This is made up of a succession of horizontal layers, or 'horizons', of varying thickness, from the surface to the parent rock. Generally speaking there are three distinct horizons, known as A, B and C. A is the top soil which is coarse-grained, and dark in colour because of the presence of humus. B is known as the sub-soil which contains some of the products leached, or washed, out of the A horizon. The C horizon consists of parent material which has been weathered in the upper part, and unweathered rock below.

Any sample of soil contains particles of different sizes. These have been divided into the following size groups:

Material
Diameter (mm)
Gravel
more than 2-0
coarse sand
2*0 - 0*2
fine sand
0*2 - 0*02
Silt
0*02 - 0*002
Clay
less than 0*002

Soils range from pure clays to pure sands. Most of them contain various proportions of sand, silt and clay and these varying proportions make up a soil's textural class. The principle classes in order of increasing fineness of material are sand, loamy sand, loam, silt loam, silty clay loam, clay loam, silt and clay.

Any soil contains both mineral and organic matter. Clay particles are the most important of the mineral particles because they are the smallest. Smaller sized particles have a greater exposed surface area than larger sized particles. The smaller the size of a particle, the greater is its reactivity.

That is to say, smaller sized particles can react or combine with water, nutrients and humus more easily than larger sized particles. Thus, a clay soil is more reactive than any other type of soil. 30Humus from decomposed organic matter is vital to a soil as it makes a heavy

soil lighter. 31In addition, it helps to bind the mineral particles together in 'crumbs'.

MANURE AND FERTILIZERS

Plant growth cannot continue if there is not a supply of minerals in a soil. The materials which are available for this purpose can be divided into two groups: the bulky, organic materials which are called manures, and the more concentrated, inorganic chemical substances which are called fertilizers. Farmyard manure, or dung, consists of a mixture of litter, solid excreta and urine. It contains three most important substances for plant materials - nitrogen, phosphate and potash. Manure is added to the soil for several reasons. It improves the physical condition of the soil. It also keeps up the level of humus in the soil, and maintains the best conditions for the activities of soil organisms. Finally, it makes up for the plant nutrients which have been removed by crops or lost by leaching and soil erosion.

Another kind of manure is green manure. This includes leguminous crops which grow quickly such as clover and lucerne. "Such crops supply additional nitrogen as well as organic matter. A leguminous crop which is ploughed under will add as much nitrogen to the soil per acre as 3 to 10 tons of farmyard manure.

Fertilizers are usually classified according to the particular food element which forms their main constituent. So, they may be grouped as nitrogenous fertilizers, phosphatic fertilizers, potassic fertilizers and so on.

The most commonly used fertilizer which contains nitrogen is ammonium sulphate, which is made from ammonia and sulphuric acid, and which contains 21% nitrogen. This element encourages rapid vegetative growth and gives plants a healthy green colour. Another valuable nitrogenous fertilizer is urea, which is made from ammonia and carbon dioxide, and contains nitrogen.

The most widely used phosphatic fertilizer, superphosphate, is made by treating mineral phosphate with sulphuric acid. Phosphorous stimulates the formation of a plant's roots, and promotes fruit and seed production. Tropical soils are very often poor in this element.

Finally, wherever high crop yields are expected, potash is used together with nitrogen and phosphorous. Potassium makes the plant

tissues stronger. "This helps the plant to withstand mechanical damage such as broken branches and torn leaves. In this way the entry of disease bearing agents, or pathogens, such as bacteria and fungi, is prevented. Potassium is important for all plants but particularly so for those that produce oil and starch or sugars. Oil palm and tapioca plants require potassium in large amounts. "It is usually supplied in the form of muriate of potash (potassium chloride), which contains 50 to 60% potassium oxide (K2O) and sulphate of potash (potassium sulphate).

A11 plants are affected by the degree of acidity or alkalinity of the soil. The less the nutrient supply, the more acid the soil becomes. Because mineral salts are basic, an acid soil has a low base content. Acidity makes some elements unavailable to plants. If a soil is very acid, with a pH value of less than 5-0, lime can be added to correct this acidity. The main constituent of lime is calcium, an important plant food. The presence of lime helps to make essential elements of plant food more easily available to plants. Nitrogen, phosphorous and potassium are more easily available in a well-limed soil than in an acid soil.

WHAT IS A COMPUTER SYSTEM?

The term computer is used to describe a device made up of a combination of electronic and electromechanical (part electronic and part mechanical) components. By itself, a 'computer has no intelligence and is referred to as hardware. A computer, or computer system, doesn't come to life until it is connected to other parts of a system. A computer system is a combination of five elements:

- Hardware.
- Software.
- People.
- Procedures.
- Data/information.

When one computer system is set up to communicate with another computer system, connectivity becomes a sixth system element. In other words, the manner in which the various individual systems are connected — for example, by, phone lines, microwave

transmission, or satellite — is an element of the total computer system.

Software is the term used to describe the instructions that tell the hardware how to perform a task; without software instructions, the hardware doesn't know what to do. People, however, constitute the most important component of the computer system. People operate the computer hardware; they create the computer software instructions and respond to the procedures that those instructions present. Right now we want to discuss the importance of data and information.

The purpose of a computer system is to convert data into information. Data is raw, unevaluated facts and figures, concepts, or instructions. This raw material is processed into useful information. In other words, information is the product of data processing. This processing includes refining, summarizing, categorizing, and manipulating the data into a useful form for decision making.

People "capture" data in a variety of ways — for example, by reading, listening, or seeing. Then they may record the data on a document. For instance, Roger Shu records his name on an employee timecard by first entering the letter R. This letter, and each of the remaining letters in his name, is an element of data, as are the numbers 12/22 and 5, used to indicate the date and the number of overtime hours worked. By themselves, these data elements are useless; we must process them to make them mean something. The report produced when Roger's data is run through a computer-based employee records system gives us information — for example, the amount of money due Roger for his overtime work.

COMPUTER HARDWARE

If, at a job interview, you are asked about what kind of computer equipment you've used before or what you know about hardware, and you don't have an answer, your interviewer will probably perceive you as a person who doesn't take an active role in what's going on around you — a perception that could dramatically hurt your chances of getting the job you want. In today's business world, not knowing what computer hardware is and what typical hardware components do is similar to being a taxi driver and not knowing what a car is and that it has components such as an engine, doors, windows, and so on.

Computer hardware can be divided into four categories: (1) input hardware, (2) storage hardware, (3) processing hardware, and (4) output hardware.

Input Hardware The purpose of input hardware is to collect data and convert it into a form suitable for computer processing. The most common input device is a keyboard. It looks very much like a typewriter keyboard with rows of keys arranged in the typical typewriter layout, as well as a number of additional keys used to enter special computer-related codes. Although it isn't the only type of input device available, the computer keyboard is the one most generally used by the business community.

Storage Hardware The purpose of storage hardware is to provide a means of storing computer instructions and data in a form that is relatively permanent, or nonvolatile — that is, the data is not lost when the power is turned off — and easy to retrieve when needed for processing. Storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals, commonly on disk or tape, rather than on paper.

Processing Hardware The purpose of processing hardware is to retrieve, interpret, and direct the execution of software instructions provided to the computer. The most common components of processing hardware are the central processing unit and main memory.

Output Hardware The purpose of output hardware is to provide the user with the means to view information produced by the computer system. Information is output in either hardcopy or softcopy form. Hardcopy output can be held in your hand, such as paper with text (words or numbers) or graphics printed on it. Softcopy output is displayed on a monitor, a television like screen on which you can read text and graphics.

COMPUTER SOFTWARE

A computer is an inanimate device that has no intelligence of its own and must be supplied with instructions so that it knows what to do and how and when to do it. These instructions are called software. The importance of software can't be overestimated. You might have what most people consider the "best" computer sitting on your desk in

front of you; however, without software to "feed" it, the computer will do nothing more than take up space.

Software is made up of a group of related programs, each of which is a group of related instructions that perform very specific processing tasks. Software acquired to perform a general business function is often referred to as a software package. Software packages, which are usually created by professional software writers, are accompanied by documentation — users' manuals — that explains how to use the software.

Software can generally be divided into two categories: (1) systems software and (2) applications software.

Systems Software Programs designed to allow the computer to manage its own resources are called systems software. This software runs the basic operations; it tells the hardware what to do and how and when to do it. However, it does not solve specific problems relating to a business or a profession. For example, systems software will not process a prediction of what your company's tax bill will be next year but it will tell the computer where to store the data used during processing.

Applications Software Any instructions or collection of related programs designed to be carried out by a computer to satisfy a user's specific needs are applications software. A group of programs written to perform payroll processing is one type of applications software, as are programs written to maintain personnel records, update an inventory system, help you calculate a budget, or monitor the incubation temperatures at your poultry farm.

Applications software can be purchased "off the shelf" — that is, already programmed, or written — or it can be written to order by qualified programmers. If, for example, its payroll processing requirements are fairly routine, a company can probably purchase one or more payroll applications software programs off the shelf to handle the job. However, if a company has unique payroll requirements, such as a need to handle the records of hourly employees, salaried employees, and commissioned employees, then off-the-shelf software may not be satisfactory. It may be more cost-effective to have the payroll programs written to exact specifications than to try to modify off-the-shelf programs to do something they were never intended to do.

THE EFFECT OF COMPUTERS ON EMPLOYMENT OPPORTUNITIES

The computers have essentially revolutionized data and information processing. They design and manufacture of computer hardware has become an enormous industry, and the need for software by all sorts of businesses — from apple growers to zoo managers — has led to the development of the applications software industry. Major retail sales and wholesale distribution operations have developed to sell these hardware and software products, as well as related products.

All these industries have one thing in common: They need workers. In fact, the growth of the computer information industry has created a vast and varied number of jobs — both for computer professionals and computer-literate users. No matter what type of business you go into, you will probably be using computer.

The employment picture for computer professionals looks good and is getting better. Several million people are employed as computer programmers, computer operators, information managers, systems analysts, data entry clerks, and other more technical workers. The growth of the microcomputer hardware and software industries in recent years has created a large number of new jobs in the retail sales and marketing of computers as well. Many jobs have also been created by companies that manufacture the various computer components and by companies that specialize in computer repair.

WHAT IS MANAGEMENT?

You know what an information system is. After we consider what management consists of, we will see how the two concepts can be put together as a management information system.

Management often refers to those individuals in an organization who are responsible for providing leadership and direction in the areas of planning, organizing, staffing, supervising, and controlling business activities. These five functions, which are the primary tasks of management, may be defined as follows:

1. Planning activities require the manager to formulate goals and objectives and develop short- and long-term plans to achieve these goals. For example, an office manager must work with top management to formulate a plan that satisfies the short- and long-term needs of the organization for office space; the vice president of marketing must take many factors into account when planning short-term advertising campaigns and activities aimed at opening up new long-term markets.

2. Management's responsibility for organizing includes the development of an organizational structure and a framework of standards, procedures, and policies designed to carry out ongoing business activities. For instance, top management must decide on the type and number of divisions and departments in the company and evaluate the effectiveness of the structure.

3. Staffing refers to management's responsibility for identifying the personnel needs of the organization and selecting the personnel, as well as training staff. Many companies have personnel managers to take charge of these activities.

4. Supervising refers to management's responsibility to provide employees with the supervision, guidance, and counseling necessary to keep them highly motivated and working efficiently toward the achievement of company objectives. This includes the recognition of good work, perhaps through certificates or bonuses, and concrete suggestions about how to improve performance. Companywide educational seminars may also be held to upgrade employees' knowledge of the company in general or perhaps to help them deal with stress and improve their health.

5. Controlling refers to management's responsibility to monitor organizational performance and the business environment so that steps can be taken to improve performance and modify plans as necessary in response to the marketplace. This includes keeping alert to new opportunities in the marketplace and recognizing new business opportunities. Many new computer software products, for example, have been developed because software companies are ever watchful for potential markets.

Each primary management function involves making decisions, and information is required to make good decisions. Thus, to fulfill its

responsibilities, management must set up information systems and subsystems.

WHAT IS A MANAGEMENT INFORMATIONAL SYSTEM?

A management information system (MIS) comprises computer-based processing and/or manual procedures to provide useful and timely information to support management decision making in a rapidly changing business environment. The system must supply managers with information quickly, accurately, and completely.

The approaches that companies take to develop information systems for management differ depending on the structure and management style of the organization. However, the scope of an MIS is generally company wide, and it services management personnel at all three traditional organizational levels:

1. Low-level, or operating, management.
2. Middle management.
3. Upper, or top, management.

The primary objective of the MIS is to satisfy the need that managers have for information that is more summarized and relevant to the specific decisions that need to be made than the information normally produced in an organization and that is available soon enough to be of value in the decision-making process. The information flows up and down through the three levels of management and is made available in various types of reports.

CHOCOLATE

Chocolate comprises a number of raw and processed foods that are produced from the seed of the tropical cacao tree. Native to lowland, tropical South America, cacao has been cultivated for at least three millennia in Central America and Mexico, with its earliest documented use around 1100 BC/ the majority of the Mesoamerican peoples made chocolate beverages, including the Maya and Aztecs, who made it into a beverage known as xocolatl, a Nahuatl word meaning «bitter water». The seeds of the cacao tree have an intense bitter taste, and must be fermented to develop the flavor.

After fermentation, the beans are dried, cleaned, roasted and the shell is removed to produce cacao nibs. The nibs are then ground and liguified, resulting in pure chocolate in fluid form: chocolate liquor. The liquor can be further processed into two components: cocoa solids and cocoa butter. Pure, unsweetened chocolate contains primarily cocoa solids and cocoa butter in varying proportions. Much of the chocolate consumed today is in the form of sweet chocolate, combining chocolate with sugar. Milk chocolate is sweet chocolate that additionally contains milk powder or condensed milk. «White chocolate» contains cocoa butter, sugar and milk, but no cocoa solids (and thus does not quality to be considered true chocolate).

Chocolate contains alkaloids such as theobromine and phenethylamine, which have physiological effects on the body. It has been linked to serotonin levels in the brain. Scientists claim that chocolate, eaten in moderation, can lower blood pressure. Dark chocolate has recently been promoted for its health benefits, including a substantial amount of antioxidants that re-duce the formation of free radicals, though the presence of theobromine renders it toxic to some animals, such as dogs and cats.

Chocolate has become one of the most popular flavors in the world. Gifts of chocolate molded into different shapes have become traditional on certain holidays: chocolate bunnies and eggs are popular on Easter, chocolate coins on Hanukkah, Santa Claus and other holiday symbols on Christmas, and hearts on Valentine’s Day. Chocolate is also used in cold and hot beverages, to produce chocolate milk and hot chocolate.

HISTORY OF YOGURT

There is evidence of cultured milk products being produced as food for at least 4,500 years. The earliest yoghurts were probably spontaneously fermented by wild bacteria living on the goat skin bags carried by nomadic people. Today, many different countries claim yoghurt as their own invention, yet there is no clear evidence as to where it was first discovered, and it may have been independently discovered several times.

The use of yoghurt by mediaeval Turks is recorded in the books Diwan Lughat al-Turk by Mahmud Kashgari and Kutadgu Bilig by

Yusuf Has Hajib written in the eleventh century. In both texts the word "yoghurt" is mentioned in different sections and its use by nomadic Turks is de-scribed. The first account of a European encounter with yoghurt occurs in French clinical history: Francis I suffered from a severe diarrhea which no French doctor could cure. His ally Suleiman the Magnificent sent a doctor, who allegedly cured the patient with yoghurt.

Tarator is a soup made of yoghurt popular in the Balkans. Until the 1900s, yoghurt was a staple in diets of the South Asian, Central Asian, Western Asian, South Eastern European and Central European regions. The Russian biologist Ilya Ilyich Mechnikov had an unproven hypothesis that regular consumption of yoghurt was responsible for the unusually long lifespans of Bulgarian peasants. Believing Lactobacillus to be essential for good health, Mechnikov worked to popularise yoghurt as a foodstuff throughout Europe. A Sephardic Jewish entrepreneur named Isaac Carasso industrialized the production of yoghurt. In 1919, Carasso, who was from Salonika, started a small yoghurt business in Barcelona and named the business Danone ("little Daniel") after his son. The brand later expanded to the United States under an Americanized version of the name: Dannon. Yoghurt with added fruit jam was in-vented to protect yoghurt from decay. It was patented in 1933 by the Radlicka Mlekarna dairy in Prague, and introduced to the United States in 1947, by Dannon.

Yoghurt was first introduced to the United States by Armenian immigrants Sarkis and Rose Colombosian, who started "Colombo and Sons Creamery" in Andover, Massachusetts in 1929. Colombo Yogurt was originally delivered around New England in a horse-drawn wagon inscribed with the Armenian word "madzoon" which was later changed to "yogurt", the Turkish name of the product, as Turkish was the lingua franca between immigrants of the various Near Eastern ethnicities who were the main consumers at that time. Yoghurt's popularity in the United States was enhanced in the 1950s and 60's when it was presented as a health food. By the late 20th century yoghurt had become a common American food item and Colombo Yogurt was sold to General Mills in 1993.

FOOD PRESERVATION (I)

Food spoilage is due to the growth of microorganisms in the food. In the course of their development these produce, in some cases, harmless products, such as lactic acid in sour milk or carbon dioxide and alcohol in bread dough made with yeast; in others harmless but undesirable products, such as the flavour which mold imparts to bread; while, in still other cases, harmful toxins are produced. Food preservation has both hygienic and economic aspects. From the point of view hygiene, food is preserved in order to prevent the formation of products which are harmful to the body.

Many essential foods are preserved for the purpose of prolonging the period of availability. Green vegetables as well as the more stable root vegetables can be fresh or kept in cans at any time. Due to improved methods of food preservation, it is now possible for everyone at all times to have clean, wholesome food a well-balanced diet. Thus any food is subject to either decay or spoilage by the growth of microorganisms. There are three classes molds, yeasts, and bacteria. All are characterized by their extremely minute size and their wide distribution.

Molds. The conditions for the growth of mold are less rigid than for any other class of microorganisms. For this reason we may find well-established settlements of molds on almost any substances: they are found on acid foods, such as lemons, oranges or tomatoes; on neutral foods, such as bread and meats; on sweets such as jellies and jams; and on salty food such as bacon or ham.

Most molds are spore bearing. Spores are clearly visible as the coloured specks which fringe the thread-like mold growth. The colour will vary with the kind of mold. The more common mold has bluish-green spores, but others with black or red spores are seen fairly often. Molds multiply most rapidly at temperatures varying from 20 to 35°C, and in damp, dark places in which there is little circulation of air. Molds may be destroyed or their growth checked by unfavourable conditions.

Low temperatures retard the growth of mold, but temperatures below that of an ordinary ice chest (10tol5°C) are necessary. Molds must have some moisture. A dry food will not mold unless it is kept in a damp place.

Molds will form in darkness or light, but many species cease to grow if exposed to bright sunlight. Circulating air is destructive to mold growth.

Yeasts. - Yeasts, unlike molds, will grow only on foods containing sugars. The reaction called fermentation changes the sugar to alcohol and carbon dioxide with minute quantities of other products. Although yeasts will grow only in the presence of sugar, they may be found widely distributed.

The mixture of various kinds of yeasts present everywhere in the air is called wild yeast. Yeasts multiply either by spores or by cell division. Among the essentials for the growth of yeasts are sugar, oxygen, water and certain inorganic salts such as those of calcium, nitrogen, and sulphur. They are easily destroyed, by high temperatures (100°C). The alcohol which they produce in their life processes slows down and, finally, completely checks further growth. For this reason beverages of high alcoholic content can be obtained only by distillation.

All fruit juices are subject to fermentation, unless the yeasts which they naturally contain are destroyed, which may easily be done by bringing the juices to boiling temperatures and sealing in clean containers while hot.

Bacteria. Although there are many properties which are characteristic of all bacteria, the differences in the behavior of the different kinds of bacteria are greater than those of the different kinds of yeasts and molds. Bacteria are widely distributed. Like yeasts and molds, they may be found anywhere in the air, water, soil, and in all foods. In a less acid medium they multiply most rapidly, and, therefore, it is the less acid foods which are most subject to bacterial decomposition. The products of decomposition vary with the kind of food and the kind of bacteria. While in most cases we wish to decrease the bacteria content, certain foods are made desirable by products of bacteria growth. Sauerkraut owes its flavour arid physiological effects to the lactic acid which is produced by the microorganisms in the course of its preparation. The flavours of cheeses, butter, and butter substitutes are also products of bacterial activity. On the other hand, the spoilage of canned foods, meats, milks and vegetables is also due to the products of bacterial growth.

Bacteria require moisture for growth. Exposure to sunlight for sufficient length of time destroys bacteria but not their spores. The temperature for optimum growth will vary (20 to 55°C) with the kind of bacteria. Bacteria are more difficult to destroy than the other microorganisms.

FOOD PRESERVATION (II)

The methods of food preservation may give temporary preservation by checking the growth of microorganisms or permanent preservation by destroying them.

Refrigeration or cold storage is the most common method of temporarily preserving food. Indeed, it is one of the most satisfactory of all methods of food preservation, as it does not markedly alter either the taste, appearance, or nutritive value of the food. Refrigeration is practised in the home and commercially. It is most successful with the foods which are least subject to bacterial decomposition, but other foods may be preserved a long time if freezing temperatures are used. Fish and animal products can be kept only by refrigeration at very low temperature. Considerable success is now being experienced in the preserving of fish and meat and of many fruits and vegetables by freezing. New methods of freezing and better storage facilities for frozen products have improved the flavour and texture of the food so treated.

The electric refrigerators are somewhat colder and contain drier air and are, therefore, more successful for the preservation of foods which are subject to bacterial growth.

Other methods of food preservation are effective over a long period of time. By these methods either the microorganisms are destroyed, or the conditions are made unsuitable for their growth. There is a variety of methods for this more permanent type of food preservation.

Drying. Drying has been a means of food preservation for centuries and is still used for many foods. It promotes preservation by re-moving the water essential for the growth of all microorganisms. We find in the market dried fruits, milks, meats, and vegetables, but the varieties of each are few.

The method of drying varies greatly with the food. Foods containing sugar require less drying than others.

Dried foods occupy less storage space and may be stored without consideration of temperature. Most dried foods require soaking before cooking in order to restore the water lost by drying. The dried foods most commonly used are prunes, raisins, currants, apples, apricots, peaches, figs, dates, beans, fish, beef, and mushrooms.

Canning. Canning is the most common form of food preservation. Preservation is insured by the use of sufficient heat to destroy all microorganisms which might develop in the canned product during storage. The temperature in the canning of food depends upon several factors. It has already been stated that bacteria and their spores become less resistant to heat as the hydrogen-ion concentration of the media increases. In canning, boiling temperature 100°C is considered low, 115 to 119°C high. It may be noted that foods of high acid concentration require either less time, or lower temperature, or both, than the less acid foods.

Experiments have shown that the rate of heat penetration is governed by a number of factors, some of which are more predictable than others. It goes without saying that the food in the centre of a glass jar will take longer to reach sterilization temperature than that in a tin, can, that large-size containers require a longer time than small, that food which is processed at 115°C reaches 100°C sooner than that processed at 100°C, and that a jar of cold food requires a longer period than one of preheated food.

Storage of Canned Food. While every effort is made to destroy the microorganisms of the food during the processing, it should be remembered that if any spores resist the temperature of the cooker, then development will be hindered by storing the canned food at low temperatures. Low temperatures are also unfavourable to the reactions which take place between the food and the tin or iron. It has been shown that the natural colour of fruits is preserved much better by storing fruits in a warehouse at 0°C, than at higher temperatures, no discolouration being observable after two and a half years of storage. It is recommended, therefore, that canned food which is not to be used within a very short time should be stored at temperatures as near 0°C as possible.

Many labels on canned foods do show a grade for the product. Definitions of these grades are given as follows: the fancy grades use uniformly perfect fruit in the best state of ripeness and of the largest size. Cans of choice grade fruit contain nearly perfect fruit of average size in a medium syrup.

In addition to these, there are two lower grades which are used largely for cooking.

DRIED AND PRESERVED FRUITS

Preserved fruits are now numerous, but not every kind of fruit is suitable for preservation. Some fruits, of course, are preferred in their natural state, while others are preferable and sometimes only procurable, in a preserved condition.

As most fruits are seasonable, it follows that those demanding them out of season must accept them in a preserved form. There are at least three different methods of preserving fruits: (1) by desiccation (drying); (2) by utilization of cold air; (3) by the use of chemicals. Some fruits, of course, are preferred in their natural state, while others are preferable and in a preserved condition 1.

Currants are the most common of all dried fruits consumed by the human family. They are the products of the vine, just as raisins, as every school boy knows, are grapes in a dried condition. Not all varieties of grapes, however, are suitable for drying. The grapes destined to be converted into raisins are invariably dried on the vines, after semi-cutting, or on the ground after the manner of currant-drying. The drying process takes some days to complete, after which the fruit is put into boxes holding about 150 lb. to be transported to the packing houses.

Machines, called "stemmers" are brought into use for removing the stems. Again the fruit is graded and passed to a "seeder", which flattens raisins and brings the seeds to the surface, while another piece of mechanism, a teeth-like roller, removes the seeds.

Plums destined for the leading grades of prunes are gathered by hand, laid in shallow utensils, and then placed in a cool and dry building to soften. Afterwards they are put into spent ovens for about twenty-four hours, a procedure which is repeated until the fruit is of the requisite dryness. Later comes the cooling process and the final

packing into cans, jars, boxes, or whatever receptacle is considered most suitable for the various markets. The drying process naturally calls for the exercise of care and skill, so that the fruit may not be deprived of its original flavour and fruity consistency.

Citron peel and lemon peel are consumed in large quantities by the people of Europe and America. There is difference in colour and thickness between the two commodities. The lemon peel is candied; otherwise the process of preserving is similar to that applied to the citron.

Crystallized fruits are now a very popular dessert, or confectionary, and they are made in many European countries. The fruits are made extracting the juice from the raw product and replacing it with sugar syrup. The hardening of the syrup preserves the fruit, and as the latter is solidified its natural form is retained.

Several methods of crystallizing are in vogue, but that in general practice is the boiling of the fruit for a certain length of time, after which it is suspended in syrup until saturated.

In due course it is removed from the syrup process and placed in drying ovens, or drying rooms, at a high temperature until crystallized. In some countries the drying is done in the open air upon trays.

EGGS AND EGG COOKERY

Eggs are indispensable in the average diet. They contain in colloidal form many of the more important but less abundant food materials, vitamins and minerals, along with fat and protein, and are an easily digestible, easily prepared, nutritious, and concentrated food in themselves, as well as being most important in the preparation of many other foods because of their colloidal nature.

There are great differences in eggs which may be attributed to many causes: the feeding and care of the hens, the kind of hen, and the care of the eggs after they are laid.

The consumer has little or no way to judge the quality of an egg from its external appearance. Difference in size does not indicate difference in quality. The colour of the shell is of little significance. A clean-shelled egg indicates a clean hennery and, therefore, an egg of better keeping qualities and flavour than those with dirty shells. An

egg shell with a chalky appearance is usually fairly fresh. A shiny smooth shell indicates an old egg.

Changes in eggs on keeping. The shell of freshly laid egg is completely filled, the yolk spherical in shape, and the white thick and gelatinous. The new-laid egg contains no bacteria which promote spoilage. It may contain drops of blood or bits of extraneous matter. This occurs very seldom, but even when the hens have the best care it is not entirely eliminated. Soon after the egg is laid, evaporation of the water with the dissolved carbon dioxide takes place through the porous shell. As these gases leave the shell, air containing microorganisms enters. At the same time, some of the water passes from the white to the yolk, and the whites begin to lose their gelatinous consistency and become thinner. The exact cause of this liquefaction of gelatinous egg white is not known.

The change may be physical or chemical. It has been proved that thin whites may be used satisfactorily in cakes, omelets, and souffles. In other words, the whipping qualities of the egg whites has not been appreciably impaired by the physical change of gelatinous to watery egg whites.

Other changes in the egg occur as the egg ages. The membrane which surrounds the yolk becomes stretched and weakened by increasing amount of water. The yolk no longer appears spherical but flattens out when the egg is broken into a dish; sometimes the stretched membrane around the yolk will be broken on cracking the egg. It is always difficult to separate the yolk and white of an old egg without breaking the yolk.

The change in the location of the water appears to be due to the changing hydrogention concentration of the egg through loss of carbon dioxide.

Freshly laid eggs put in storage in an atmosphere of carbon dioxide in a concentration sufficient to prevent this change in the carbon dioxide content of the egg do not show these changes so markedly.

The enlargement of the air space is due to the evaporation of moisture from the egg, but as the loss of water depends on the relative humidity of the storage space the size of the air space is not positive indication of either the age of the egg or its quality.

THEORY OF DEMAND

Consumer demand is the quantities of a particular good that an individual consumer wants and is able to buy as the price varies, if all other factors influencing demand are constant. That is, consumer demand is the relationship between the quantity demanded for the good and its price. The factors assumed constant are prices of other goods, income, and a number of noneconomic factors, such as social, physiological, demographic characteristics of the consumer.

The theory of demand is based on the assumption that the consumer having budget constraint seeks to reach the maximum possible level of utility, that is, to maximize utility, but he usually prefers to obtain more rather than less. The consumer has to solve the problem of choice. Provided he is to maintain a given level of utility, increases in the quantity of one good must be followed by reductions in the quantity of the other good. The consumer has to choose the specific goods within the limits imposed by his budget.

The concept of marginal utility is of great importance for solving the utility maximization problem. The marginal utility of a good is the additional utility obtained from consuming an additional unit of the good in question. The marginal utility from consuming a good decreases as more of that good is consumed. The income should be allocated among all possible choices so that the marginal utility per dollar of expenditure on each good is equal to the marginal utility per dollar of expenditure on every other good.

A price increase will result in a reduction in the quantity demanded. This relationship between the quantity demanded of a good and its price is called the law of demand. As the marginal utility from each additional unit of the good consumed decreases, the consumer will want to buy more of this good only if its price is reduced.

Market demand is the quantities of a good that all consumers in a particular market want and are able to buy as price varies and as all other factors are assumed constant. Market demand depends not only on the factors affecting individual demands, but also on the number of consumers in the market. The law of demand also works with market demand.

THEORY OF SUPPLY

The theory of supply is the theory of how much output firms choose to produce. The principal assumption of the supply theory is that the producer will maintain the level of output at which he maximizes his profit.

Profit can be defined in terms of revenue and costs. Revenue is what the firm earns by selling goods or services in a given period such as a year. Costs are the expenses which are necessary for producing and selling goods or services during the period. Profit is the revenue from selling the output minus the costs of inputs used.

Costs should include opportunity costs of all resources used in production. Opportunity cost of a commodity is the amount obtained by an input in its best alternative use (best use elsewhere). In particular, costs include the owner's time and effort in running a business. Costs also include the opportunity cost of the financial capital used in the firm.

Aiming to get higher profits, firms obtain each output level as cheaply as possible. Firms choose the optimal output level to receive the highest profits. This decision can be described in terms of marginal cost and marginal revenue.

Marginal cost is the increase in total cost when one additional unit of output is produced. Marginal revenue is the corresponding change in total revenue from selling one more unit of output.

As the individual firm has to be a pricetaker, each firm's marginal revenue is the prevailing market price. Profits are the highest at the output level at which marginal cost is equal to marginal revenue, that is, to the market price of the output. If profits are negative at this output level, the firm should close down.

An increase in marginal cost reduces output. A rise in marginal revenue increases output. The optimal quantity also depends on the output prices as well as on the input costs. Of course, the optimal supply quantity is affected by such noneconomic factors as technology, environment, etc.

Making economic forecasts, it is necessary to know the effect of a price change on the whole output rather than the supply of individual firms.

Market supply is defined in terms of the alternative quantities of a commodity all firms in a particular market offer as price varies and as all other factors are assumed constant.

FACTORS OF PRODUCTION: CAPITAL AND LABOUR

Factors of production are resources used by firms as inputs for a good or service to be produced. Factors of production are as follows: capital, labor, and natural resources. In economic theory, the term "capital" refers to goods and money used to produce more goods and money. Classifications of capital vary with the purpose of the classification. The most general distinction is the one made between physical, financial, and human capital.

Physical capital is land, buildings, equipment, raw materials. Bonds, stocks, available bank balances are included in the financial capital. They both make a great contribution to production. To group capital into fixed capital and circulating capital is common practice. The former refers to means of production such as land, buildings, machinery and various equipment. They are durable, that is, they participate in the production process over several years.

Human capital is knowledge that contributes "know-how" to production. It is increased by research and disseminated through education. Investment in human capital results in new, technically improved, products and production processes which improve economic efficiency. Like physical capital, human capital is important enough to be an indicator of economic development of a nation.

It is common, in economics, to understand labor as an effort needed to satisfy human needs. It is one of the three leading elements of production. Labor has a variety of functions: production of raw materials, manufacturing of final products, transferring things from one place to another, management of production, and services like the ones rendered by physicians and teachers. One can classify labor into productive and unproductive. The former produces physical objects having utility. The latter is useful but does not produce material wealth. Labor of the musician is an example.

Unlike other factors of production, for example capital, when workers are employed, their efficiency can vary greatly with organization of work and their motivation. Demand for labor is

influenced by the demand for goods produced by workers, the proportion of wages in total production costs, etc. The supply of labor depends upon the size of population, geographic mobility, skills, education level (human capital), etc. Workers supply labor either individually or through trade unions. If demand for and supply of labor are not in equilibrium, there is unemployment. The rate of unemployment is a percentage of the total labor force without a job.

Factors of production are combined together in different proportions in order to produce output. It is assumed in economics that one should choose the combination of factors which minimizes the cost of production and increases profits.

The third factor of production is natural resources.

ADAM SMITH

You don't have to have a photographic memory for dates to know that 1776 was a significant year in history. In that year, as we all know, the Declaration of Independence was signed in Philadelphia. Fewer people probably know that also in that year, a Scottish professor of philosophy published a book entitled An Inquiry into the Nature and Causes of the Wealth of Nations. (This work is known universally as The Wealth of Nations.) This event represented a watershed in the development of intellectual thought on economic issues and problems. Although many of the ideas in the book weren't entirely new at the time, the philosophy professor, whose name was Adam Smith, is generally credited with being the father of the discipline of economics.

Professor Smith taught moral philosophy at the University of Glasgow. His specialty was "natural theology", which sought to understand and formulate the natural laws that governed physical and social phenomena. At that time the field of economics was a branch of the discipline of philosophy, which also encompassed, as it still does today, ethics and theology. The branch of philosophy that included economics in the eighteenth century was called "political economy".

At the time Smith wrote this monumental work, the affluence of a nation was measured by many politicians in terms of the gold and silver accumulated in national treasuries. Smith pointed out that the

wealth of nations was chiefly determined by people conducting their daily business rather than by the amount of gold and silver in a government treasury. He believed that the accumulation of capital equipment, such as machines and structures used by factories, was a vital determinant of wealth because it enhanced the division of labor. Smith argued that saving was critically important as a means of providing the funds to finance the accumulation of capital.

His background in natural theology led him to conclude that trade in unregulated markets would maximize the wealth of nations. The foundation for this belief was the notion of rational behavior. The main contribution of Adam Smith was the formulation of a theory of economic interaction.

Smith believed that rational behavior is biologically deter-mined and that people have a tendency to pursue their self-interest. The belief in the effectiveness of a system of unregulated markets in maximizing well-being is a hallmark of Smith's views. Smith is often credited with supporting laissez-faire, a French term used to mean lack of government intervention in business affairs. His views on the role of government were quite complex. In general, he believed that much government intervention in markets did more harm than good.

Smith can justly be credited with establishing economics as a separate social science. He firmly established the individual as the main object of study and provided the first attempt to systematically analyze how the economy functions.

TAXES AND PUBLIC SPENDING

In most economies government revenues come mainly from direct taxes on personal incomes and company profits as well as indirect taxes levied on purchase of goods and services such as value added tax (VAT) and sales tax. Since state provision of retirement pensions is included in government expenditure, pension contributions to state-run social security funds are included in revenue, too. Some small component of government spending is financed through government borrowing.

Government spending comprises spending on goods and services and transfer payments. Governments mostly pay for public goods, that is, those goods that, even if they are consumed by one person, can still

be consumed by other people. Clean air, national defense, health service are examples of public goods. Governments also provide such services as police, fire-fighting and the administration of justice.

A transfer is a payment, usually by the government, for which no corresponding service is provided in return. Examples are social security, retirement pensions, unemployment benefits and, in some countries, food stamps. In most countries there are campaigns for cutting government spending. The reason for it is that high levels of government spending are believed to exhaust resources that can be used productively in the private sector. Lower incentives to work are also believed to result from social security payments and unemployment benefits.

Another reason for reducing government spending is to make room for tax cuts. Government intervention manifests itself in tax policy which is different in different countries. In the United Kingdom the government takes nearly 40 percent of national income in taxes. Some governments take a larger share, others a smaller share. The most widely used progressive tax structure is the one in which the average tax rate rises with a person's income level. As a result of progressive tax and transfer system most is taken from the rich and most is given to the poor.

Rising tax rates initially increases tax revenue but eventually result in such large falls in the equilibrium quantity of the taxed commodity or activity that revenue starts to fall again. High tax rates are said to reduce the incentive to work. If half of all we earn goes to the government, we may prefer to work fewer hours a week and spend more time in the garden or watching television. Cuts in tax rates will usually reduce the deadweight tax burden and reduce the amount of taxes raised but might increase eventual revenue. If governments wish to reduce the deadweight tax burden and balance spending and revenue, they are supposed to reduce government spending in order to cut taxes.

INFLATION

Inflation is a steady rise in the average price and wage level. The rise in wages being high enough to raise costs of production, prices grow further resulting in a higher rate of inflation and, finally, in an

inflationary spiral. Periods when inflation rates are very large are referred to as hyperinflation.

The causes of inflation are rather complicated, and there is a number of theories explaining them. Monetarists, such as Milton Friedman, say that: inflation is caused by too rapid increase in money supply and the corresponding excess demand for goods.

Therefore, monetarists consider due government control of money supply to be able to restrict inflation rates. They also believe the high rate of unemployment to be likely to restrain claims for higher wages. People having jobs accept the wages they are being paid, the inflationary spiral being kept under control. This situation also accounts for rather slow increase in aggregate demand.

On the other hand, Keynesians, that is, economists following the theory of John M. Keynes, suppose inflation to be due to processes occurring in money circulation. They say that low inflation and unemployment rates can be ensured by adopting a tight incomes policy.

Incomes policies, though monetarists argue, may temporarily speed up the transition to a lower inflation rate but they are unlikely to succeed in the long run.

The costs of inflation depend on whether it was anticipated and the extent to which the economy's institutions allow complete inflation adjustment.

The longer inflation continues, the more the economy learns to live with it. Indexation is a means to reduce the costs of some inflation effects. Indexed wages or loans mean that the amount to be paid or repaid will rise with the price level. Indexation has already been introduced in countries that had to live with inflation rates of 30 or 40 percent for years. And the more countries adjust their economies to cope with inflation, the closer they come to hyperinflation. Indexation means that high rates of inflation are much more likely to continue and even to increase.

MONEY

Money is one of man's greatest inventions and the fact that all but the least developed of human societies use money indicates that it is an essential tool of civilization. In the absence of some form of

money, exchange may take the form of barter which is the direct exchange of goods and services for goods and services. Barter will serve man's requirements quite adequately when he provides most of his needs directly and relies upon market exchanges for very few of the things he wants. As the extent of specialization increases, the barter system proves very inefficient and frustrating. In the simplest societies each family will provide by its own efforts most of its needs and perhaps some small surpluses. A farmer will exchange any small surplus of food, wool or hides for the surpluses of other producers. But this system of exchange becomes very cumbersome as economic activities become more specialized. A metal worker must seek out a large number of other specialists in order to obtain, by barter, the variety of goods he needs to satisfy his daily wants.

The great disadvantage of barter is the fact that it depends upon a 'double coincidence of wants'. A hunter who wants to exchange his skins for corn must find, not merely a person who wants skins, but someone who wants skin and has a surplus of corn for disposal. The alternative is to exchange his skins for some other article and they carry out a series of similar exchanges until he finally gets his corn. Time and energy which could be devoted to production is spent on a laborious system of exchange.

Quite early in his history man discovered a much more convenient arrangement. The use of some commodity as a medium of exchange makes exchange triangular and removes the major difficulty of the barter system. If a commodity is generally acceptable in exchange for goods and services, it is money. A producer now exchanges his goods for money and the money can be exchanged for whatever goods and services he requires.

THE FUNCTIONS OF MONEY

1. A medium of exchange.

The use of money as a medium of exchange makes possible a great extenuation of the principle of specialization. In an advanced society the use of money allows us to exchange hours of labor for an amazing variety of goods and services. We can exchange, for example, two weeks labor for a holiday abroad just as easily as we can exchange it for a piece of furniture or a year's rent on a television set.

Such exchanges are taken for granted yet they would be inconvenient without the use of money.

2. A measure of value.

The first step in the use of money was probably the adoption of some commodity as a unit of account or measure of value. Money, most likely, came into use within the barter system as a means whereby the values of different goods could be compared. The direct exchange of goods for goods would raise all sorts of problems regarding valuation. For example, “How many bushels of corn are equal in value to one sheep, if twenty sheep exchange for three cows and one cow exchanges for ten bushels of corn?” The problem of exchange rates is easily solved when all other commodities are valued in terms of a single commodity which then acts as a standard of value. Money now serves as such a standard and when all economic goods are given money values (i.e. prices), we know, immediately, the value of one commodity in terms of any other commodity.

3. A store of value.

Once a commodity becomes universally acceptable in exchange for goods and services, it is possible to store wealth by holding a stock of this commodity. It is a great convenience to hold wealth in the form of money. Consider the problems of holding wealth in the form of some other commodity, say wheat. It may deteriorate, it is costly to store, may be insured, and there will be significant handling costs in accumulating and distributing it. In addition, its money value may fall when it is being stored. The great disadvantage of holding wealth in the form of money has become very apparent in recent years - during periods of inflation its exchange value falls.

4. A means of making deferred payments.

An important function of money in the modern world, where so much business is conducted on the basis of credit, is to serve as a means of deferred payment. When goods are supplied on credit, the buyer has immediate use of them but does not have to make an immediate payment. The goods can be paid for three, or perhaps six, months after delivery. In the case of hire purchase contracts, the buyer takes immediate delivery but pays by means of installments spread over one, two, or three years.

A complex trading organization based upon a system of credit can only operate in a monetary economy. Sellers would be most

unlikely to accept promises to pay in the future which were expressed in terms of commodities other than money. They would have no idea how much of the commodities they would need in the future, and if they do not want them, they face the trouble and risks involved in selling them. Sellers will accept promises to pay expressed in terms of money because, whatever the pattern of their future wants, they can be satisfied by using money.

INTRODUCTION TO FINANCIAL MARKETS

A commercial bank borrows money from the public, crediting them with a deposit. The deposit is a liability of the bank. It is the money owed to depositors. In turn the bank lends money to firms, households, or governments wishing to borrow.

Commercial banks are financial intermediaries with a government license to make loans and issue deposits, including deposits against which cheques can be written.

Major important banks in most countries are included in the clearing system in which debts between banks are settled by adding up all the transactions in a given period and paying only the net amounts needed to balance inter-bank accounts.

The balance sheet of a bank includes assets and liabilities. We begin by discussing the asset side of the balance sheet.

Cash assets are notes and coins kept in their vaults and deposited with the Central Bank. The balance sheet also shows money lent out or used to purchase short-term interest-earning assets such as loans and bills. Bills are financial assets to be repurchased by the original borrower within a year or less. Loans refer to lending to households and firms and are to be repaid by a certain date. Loans appear to be the major share of bank lending. Securities show bank purchases of interest-bearing long-term financial assets. These can be government bonds or industrial shares. Since these assets are traded daily on the Stock Exchange, these securities seem to be easy to cash whenever the bank wishes, though their price fluctuates from day to day.

We now examine the liability side of the balance sheet which includes, mainly, deposits. The two most important kinds of deposits are sure to be sight deposits and time deposits. Sight deposits can be withdrawn on sight whenever the depositor wishes. These are the

accounts against which we write cheques, thus withdrawing money without giving the bank any warning. Therefore, most banks do not pay interest on sight deposits, or chequing accounts.

Before time deposits can be withdrawn, a minimum period of notification must be given within which banks can sell off some of their high-interest securities or call in some of their high-interest loans in order to have the money to pay out depositors. Therefore, banks usually pay interest on time deposits. Apart from deposits banks usually have some other liabilities as, for instance, deposits in foreign currency, cheques in the process of clearance and others.

JAMES BUCHANAN

Chance has a lot to do with James Buchanan's success as an economist. By chance he entered the University of Chicago's graduate economics program. By chance he learned German, and by chance one day in the library he discovered a slim book written in German in 1896 by a Swedish author. It was the dissertation of Knut Wicksell, a Swedish economist known for his theoretical work in monetary policy. A portion of that book became one of the main planks of Buchanan's theory of public choice.

Buchanan believes that individuals in politics act to maximize net gains just as they would in markets: they pursue their own interests. For politicians, this means responding to the interests of their own constituents so that they can remain in office. Buchanan believes legislators trade votes to obtain enactment of laws that benefit the special interests they represent, and this "loyalty" results in bulging government budgets.

his theory helps explain why budget deficits seem to be chronic and uncontrollable. Buchanan says that Keynesian economics has destroyed the constraints on politicians' appetite to spend without the apparent necessity to tax. His ideas have made him unpopular with more liberal economists and politicians. When he received a Nobel Prize in economics in 1986 for his work, a stir of controversy arose. His critics claimed his award reflected political fashion rather than meritorious scholarship. Buchanan admits his ideas are "not standard", but says many academics have failed to use common-sense solutions even when they are appropriate.

Buchanan grew up on a farm in Tennessee, and when he is not teaching at George Mason University, he runs a 400-acre farm outside Blacksburg, Virginia. He learned how the eastern establishment can discriminate against outsiders while he was in officer's school in the Navy before World War II. Judging by the reaction to his award, he remains outside that establishment even today.

Buchanan says that to control government spending, we should change the rules surrounding government policy makers. He favors a balanced-budget amendment to the Constitution, which would outlaw deficit spending except in cases of national crisis. He may be on the conservative end of the spectrum of economic thought, but he is certainly thriving.

LAND USE PROJECT

The land use project is to answer for many questions. The land surveyor has to answer them. He has to answer what response the farms can get to more fertilizer for corn on the land. He is to know how the land will perform if planted to wheat and what the proper field rotation is. He should consider the location of the fields and living centers.

The answers the land surveyor gives to such questions determine how near he comes to reaching the ceiling income of the projected land uses. The best answers change constantly as varieties, fertilizers, equipment, and other things change. The problem of adjusting the kinds of land uses cannot be separated from the problem of intensifying the agricultural production. Both problems actually must be solved simultaneously to get a good answer for either. This process requires an intimate knowledge of land and its response to various treatments. Yields will increase rapidly if wise land use practices are implemented.

WHAT IS SOIL CONSERVATION?

Soil conservation is the application on the land of all necessary measures in proper combinations to build up and maintain soil productivity for efficient, abundant agricultural production on a sustained basis.

Soil conservation, therefore, means proper land uses, protecting the land against all the forms of soil deterioration. It is rebuilding eroded and depleted soils, conserving moisture for plant use. It includes proper agricultural drainage and irrigation where needed and other measures which contribute to maximum practical yields and conserve the soils for future uses — all at the same time.

With proper management, most soil resources can be used and still retain their productive capacity over long periods of time. The problem of conserving these resources is thus one of accepted practices that permit their effective use while at the same time safeguarding their productive capacity over time. Soil conservation is a matter of good land use and management.

The State Land Survey provides a system of using and managing land based on the capabilities of the land itself, involving the application of the best measures or practices known, and designed to result in the greatest production without damage to the land. The State Land Use Control has to secure the wise uses of soil resources. The land users must care in selecting their production practices so as to secure the practicable return. They also must show comparable care in choosing and timing the conservation investments and practices which are used to build up and maintain the productivity of soils.

The State Land Use Control provides the control of all the land uses. The land users should accept practices that do not damage the soil and permit their effective use. To build up and maintain the productivity of the soils is their prime concern.

A special problem arises with soil erosion. Rapid soil destruction means irreparable loss of land at least as far as cropping is concerned. Soil conservation is directed against the destructive effects of wind and water. The land surveyors should keep the soils in such shape that they would remain productive as long as possible.

SOIL CLASSIFICATION

The soil survey plays an extremely important role in land cadastre.

To put the classification and mapping of soils on a uniform scientific basis is rather difficult, for no two places have soils identical

in every respect. Soils have many properties, some of which can be assessed in the field and others only in the laboratory.

Different users will not agree about the priority attached to these properties. To the specialist of fertilizers acidity or to the gas engineer liability to corrode pipes may be all important. But the land surveyor or ecologist concerns himself with a wider range of soil properties. Therefore to find a single classification suitable for everyone is impossible and impracticable.

The five alternatives listed below figure in most legends of soil survey texture maps for land cadastre.

1. The predominant size of the mineral particles is well correlated with other soil properties. In sandy soils particles between 0.06 and 2 mm diameter predominate. In silty soils those between 0.002 and 0.06 mm, and in clayey soils those smaller than 0.002 mm. In loamy soils no one particle size range is predominant. Sandy soils are also called «light» or coarse-textured, clay soils — «heavy» or fine-textured, and silty and loamy soils are sometimes grouped as medium-textured. Stoniness refers to the proportion of particles of a diameter larger than 2 mm. A more detailed scheme of texture classes is outlined in soil survey manuals.

2. Natural drainage. The incidence of water logging is another important soil condition. It can be assessed directly or by interference from the presence or absence of grey or mottled colours, or by a peaty surface layer. The categories used are excessively well, moderately well, imperfectly, poorly and very poorly drained.

3. Major groups. Soils are formed by physical, chemical and biological processes. Classifications which emphasize properties indicating the nature and extent of these processes are called natural or genetic.

Soil-forming processes usually lead to the development of a distinct layering in the soil, more or less parallel to the surface of the ground. The sequence of layers (technically called soil horizons) down to unaltered geological material is called the soil profile. Most classifications define profile classes which group together similar soil profiles regardless of where they occur.

4. Parent material. Within a given neighborhood, the nature of the geological material from which the soil has formed is often a useful indicator of its other properties, particularly when no soil map

is available. Thus one may refer to «chalk soils», «boulder clay soils», etc. The land surveyors should recognize that considerable variation occurs within these groups, caused by other soil forming factors.

5. Soil series. Subgroups of the genetic classification are divided by texture and parent material into soil series. Soil series are named after localities where examples are known to occur. While thus defined as a profile class, soil series are commonly used as mapping units on detailed soil maps.

AGRO-INDUSTRIAL COMPLEX AND COMMUNICATIONS SYSTEMS

In land survey terms a communications system encompasses the transportation of people, freight, electricity, gas and liquids. Every year large areas of land are taken for motorways and farm roads. Infarm land survey deals with the farm road network of agricultural enterprises. The design and operation of the farm network should meet the needs of the agro-industrial complex.

Modern transportation has tended to relax the influence of distance upon agricultural and other land-based production. But still this influence doesn't disappear, and location of communications systems is of crucial importance.

Until comparatively recently the co-ordination and routing of internal and interfarm transportation systems has been restricted by the potential of different agricultural enterprises. The development of agro-industrial complex has created new opportunities for construction, improvement, widening, and relocation of existing farm roads. The transportation network is established as a composite part of agricultural production.

The transportation network needs a substantial acreage of land. The farm roads which link the railway with the production centres and residential areas also need land. These requirements together with the new areas needed for the construction of transportation network call for a shift of a substantial land acreage of arable land and other land resources.

The farm roads tend to fall into two groups, those which are of non-agricultural use, and those which link internal transportation

network of agricultural enterprise. The expenditure on improvements of these two groups of farm roads depends on their importance for farm operation.

The width of the farm roads is designed according to the existing needs. The farm roads used for transportation of people and farm machinery are 5-8 metres wide. The road network which links the residential areas and production units with the railway and motorway is projected with the width of 8-13 metres.

Substantial additional acreages are, however, needed for the construction and improvement of farm roads. The agro-industrial complex needs a modern well-developed transportation system based on a broad approach to agricultural production.

MOTORWAYS AND ROAD CONSTRUCTION

The impact of the road network on all aspects of agriculture must be fully assessed. It is the road network which is one of the greatest consumers of land. Every year large areas are taken for the construction improvement and reallocation of communications systems of rural areas. The land surveyors should know, therefore, the fundamental principles and provisions of road and motorway design. These may be summarized as follows:

1. The proposed routing must satisfy all short - and long-term traffic requirements. The routing must be co-ordinated with the communications system. The agricultural production should be linked with the existing road network.

2. Each motorway must be subject to satisfactory cost benefit analysis.

3. The motorway must be integrated with the landscape thus minimizing loss of amenities to surrounding communities.

4. Consideration must be given to environmental standards from the user's viewpoint.

5. Lane width must be sufficient to ensure satisfactory standards of safety for all classes of vehicles.

6. Dual carriage-ways should be provided to reduce the possibility of head-on collisions.

7. Uniform and consistent operating conditions must be provided.

8. There must be specially designed access facilities to enable vehicles to enter and leave with the maximum safety and minimum disturbance.

9. There must be adequate traffic direction signs in order that drivers may have sufficient time to change direction.

10. Service areas, parking and other facilities must be provided in order to allow sufficient rest for drivers, thus reducing strain factor.

Extensive surveys are needed to assist in evaluation of the routing alternatives. These include traffic, engineering, and land surveys. Sophisticated modelling techniques must be used to stimulate the effects of various estimated traffic flows and densities.

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MECHANIZATION IN SOME FOREIGN COUNTRIES

The efficiency of farm production is one of the economic problems associated with agriculture that many countries still face nowadays. Some other economic problems are intensification and specialization of agricultural production, labour productivity, farm planning and management, prices for farm products, their marketing and others. Simple logic makes it evident that the first three issues are closely connected with farm mechanization and automation of agricultural operations.

In Canada and in many of the Eastern and the extreme Western states of the USA conditions are not unlike those in Great Britain, but the prairie farms are entirely different and represent - with the adjacent “Great Planes” area - one of the most extreme examples of mechanization that can be found in the world. Here, as in some Southern Russia’s steppe lands, the simple alternation of cereal cropping and fallow leads to a very inexpensive form of mechanization. This factor, supplemented by adequate farm human resources and up-to-date agricultural know-how, makes farming production costs reasonably low and, thus, agricultural production becomes more profitable.

New Zealand farms contrive to achieve a high output per man by making the best use of their pasture and climate, and generally providing each worker with as much equipment as he can handle for doing time-consuming chores such as milking. There is only one worker to about 155 acres (60 ha) of farm land. Extensive use is made

of advanced techniques, e.g. aerial top-dressing, in order to improve the production from areas that are difficult or impossible to deal with by tractor power. This work, as with aerial top dressing and straying in the US, is carried out by contract services. The further mechanization progresses into such specialized fields, the more impossible it became for family farmers to carry out the work with machinery of their own.

Several of the countries of Eastern Europe and the USA are of particular interest from the viewpoint of mechanization, on account of their efforts which have been undertaken to employ nationally planned policies, through a system of very spacious state, business-owned and/or private farms. Such policies clearly permit rapid introduction of large-scale high-power machinery, and that directly leads to agriculture's intensification and labour productivity.

Further increase in animal productivity is achieved both by the introduction of new machinery and by wider automation of various processes on livestock farms in the industrialized countries. Many farms are using now automatic waterers which provide water to livestock at all times; at the press of the button, silage unloaders remove the food stuffs from the silo and drop it into the conveyer that carries the silage to the feed troughs.

One of the basic principle obstacles to economic agricultural mechanization in many countries is particularly small size of farms. Though this is a quite serious problem in Britain, the situation in many countries of Western Europe is far worse, a high proportion of the farm being too small to provide a reasonable income for the occupiers in modern conditions. This is also one of the major problems in many other parts of the world, especially in parts of Africa and Asia, where farmers are also left face to face with the lack of skilled personnel and undeveloped techniques.

THE HISTORY OF AGRICULTURAL IMPLEMENTS' DEVELOPMENT

From the early ages man tried to cultivate soil using the most elementary method of modifying soil conditions. He broke up the surface and prepared a seed-bed with the most primitive cultivating device, a digging implement - a hoe.

The greatest mechanical advance in the early days of agriculture was the evolution of the plough from the primitive hoe. The use of the plough replaced manual labour by labour of animal power. This is one of the landmarks of agricultural process. It began, thousands years ago, with simple devices for harnessing the power of man himself; then progressed with the construction of implements and machines designed to make use of the greater power of domesticated animals, mostly horses and oxen.

The plough still rests to be the most important tillage tool. It has been changed and improved during the centuries. In the 18th century there was an attempt to improve agricultural implements. New methods and inventions were applied to farming operations. By the 19th century a variety of agricultural implements appeared, which were now called “agricultural machinery”. In agriculture, the use of water-power and then of steam greatly stimulated the invention of machinery, replacing manual labour.

A threshing machine was invented in the second half of seventeen hundreds, and productively used in the 19th century. It was driven by water and wind, sometimes by horse labour, and later by steam.

Later on, in 1860, the internal-combustion engine was invented. It was used to drive stationary machines, as chaff-cutters, root-cutters and corn-mills in the barn. Steam engines, though widely used on the road, suffered the disadvantage in the use on the land. Then the internal-combustion engine was perfected, and agricultural tractors appeared.

But a still newer source of power on the farm is electricity. It was firstly used for lighting. When it became available at low cost, it came into use on the farm.

Agricultural implements are now very numerous. They are subdivided into six groups:

- machinery and equipment movers, i.e. engines of all kinds, tractors, etc.;
- cultivating machinery: ploughs of all sorts, harrows, rollers, cultivators, etc.;
- harvesting machinery, such as mowers, self-binders, threshing machines, combines, elevators, potato-diggers, etc.;

- field supplementary equipment: manure and fertilizer distributers, sprinkling installations, sprayers and many others.

- stationary (or barn) equipment, including such food-preparing machines as chaff-cutters, grinding-mills, root-cutters, manure-scrappers, distributing belts, etc.;

- dairy-machinery, including milking machines, separators, churns, sterilizing machines, etc.

In addition, there is a number of other machines and devices that find intensive use in agricultural production, and sheep-shearing units, rearing chambers, grain conveyers, farm repair shop mechanized equipment, lifting and loading machines being among them**.**

TRACTOR

A tractor is an engineering vehicle specifically designed to deliver a high tractive effort (or torque) at slow speeds, for the purposes of hauling a trailer or machinery used in agriculture or construction. Most commonly, the term is used to describe a farm vehicle that provides the power and traction to mechanize agricultural tasks, especially (and originally) tillage, but nowadays a great variety of tasks. Agricultural implements may be towed behind or mounted on the tractor, and the tractor may also provide a source of power if the implement is mechanised.

The word tractor was taken from Latin, being the agent noun of trahere "to pull". The first recorded use of the word meaning "an engine or vehicle for pulling wagons or ploughs" occurred in 1901, displacing the earlier term "traction engine" (1859)

Traction engines

The first powered farm implements in the early 19th century were portable engines – steam engines on wheels that could be used to drive mechanical farm machinery by way of a flexible belt. Richard Trevithick designed the first 'semi-portable' stationary steam engine for agricultural use, known as a "barn engine" in 1812, and it was used to drive a corn threshing machine. The truly portable engine was invented in 1839 by William Tuxford of Boston, Lincolnshire who started manufacture of an engine built around a locomotive-style boiler with horizontal smoke tubes. A large flywheel was mounted on the crankshaft, and a stout leather belt was used to transfer the drive to

the equipment being driven. In the 1850s, John Fowlerused a Clayton & Shuttleworth portable engine to drive apparatus in the first public demonstrations of the application of cable haulage to cultivation.

In parallel with the early portable engine development, many engineers attempted to make them self-propelled – the fore-runners of the traction engine. In most cases this was achieved by fitting a sprocket on the end of the crankshaft, and running a chain from this to a larger sprocket on the rear axle. These experiments met with mixed success. The first propertraction engine, in the form recognisable today, was developed in 1859 when British engineer Thomas Aveling modified a Clayton & Shuttle-worth portable engine, which had to be hauled from job to job by horses, into a self-propelled one. The alteration was made by fitting a long driving chain between the crankshaft and the rear axle.

The first half of the 1860s was a period of great experimentation but by the end of the decade the standard form of the traction engine had evolved and would change little over the next sixty years. It was widely adopted for agricultural use. The first tractors were steam-powered plowing engines. They were used in pairs, placed on either side of a field to haul a plow back and forth between them using a wire cable. In Britain Mann'sand Garrett developed steam tractors for direct ploughing, but the heavy, wet soil of England meant that these designs were less economical than a team of horses. In the United States, where soil conditions permitted, steam tractors were used to direct-haul plows. Steam-powered agricultural engines remained in use well into the 20th century until reliable internal combustion engines had been developed.

Gasoline-powered tractor

In 1892, John Froelich invented and built the first gasoline/petrol-powered tractor in Clayton County, Iowa, USA. A Van Duzen single-cylinder gasoline engine was mounted on a Robinson engine chassis, which could be controlled and propelled by Froelich's gear box. After receiving a patent, Froelich started up the Waterloo Gasoline Engine Company and invested all of his assets. However, the venture was very unsuccessful, and by 1895 all was lost and he went out of business.

Richard Hornsby & Sons are credited with producing and selling the first oil-engined tractor in Britain invented by Herbert Akroyd

Stuart. The Hornsby-Akroyd Patent Safety Oil Traction Engine was made in 1896 with a 20 hp engine. In 1897, it was bought by Mr. Locke-King, and this is the first recorded sale of a tractor in Britain. Also in that year, the tractor won a Silver Medal of the Royal Agricultural Society of England. That tractor would later be returned to the factory and fitted with a caterpillar track.

The first commercially successful light-weight petrol-powered general purpose tractor was built by Dan Albone, a British inventor in 1901. He filed for a patent on 15 February 1902 for his tractor design and then formed Ivel Agricultural Motors Limited. The other directors were Selwyn Edge, Charles Jarrott, John Hewitt and Lord Willoughby. He called his machine the Ivel Agricultural Motor, the word 'tractor' did not come into common use until later. The Ivel Agricultural Motor was light, powerful and compact. It had one front wheel, with solid rubber tyre, and two large rear wheels like a modern tractor. The engine used water cooling, by evaporation. It had one forward and one reverse gear. A pulley wheel on the left hand side allowed it to be used as a stationary engine, driving a wide range of agricultural machinery. The 1903 sale price was £300. His tractor won a medal at the Royal Agricultural Show, in 1903 and 1904. About 500 were built, and many were exported all over the world. The original engine was made by Payne & Co. of Coventry. After 1906, French Aster engines were used.

The first successful American tractor was built by Charles W. Hart and Charles H. Parr. They developed a two-cylinder gasoline engine and set up their business in Charles City, Iowa. In 1903, the firm built 15 "tractors", a term with Latin roots coined by Hart and Parr, and a combination of the words traction and power. Their 14,000-pound #3 is the oldest surviving internal combustion engine tractor in the United States, and is on display at the Smithsonian National Museum of American History in Washington D.C. The two-cylinder engine has a unique hit-and-miss firing cycle that produced 30 horsepower at the belt and 18 at the drawbar.

In 1908, the Saunderson Tractor and Implement Co. of Bedford introduced a four-wheel design, and went on to become the largest tractor manufacturer in Britain at the time.

While unpopular at first, these gasoline-powered machines began to catch on in the 1910s, when they became smaller and more

affordable. Henry Ford introduced the Fordson, the first mass-produced tractor, in 1917. They were built in the U.S., Ireland, England and Russia, and by 1923, Fordson had 77% of the U.S. market. The Fordson dispensed with a frame, using the strength of the engine block to hold the machine together. By the 1920s, tractors with gasoline-powered internal combustion engines had become the norm.

Harry Ferguson applied for a British patent for his three-point hitch in 1926, a three point attachment of the implement to the tractor and the simplest and the only statically determinate way of joining two bodies in engineering. The Ferguson-Brown Company produced the Model A Ferguson-Brown tractor with a Ferguson-designed hydraulic hitch. In 1938 Ferguson entered into a collaboration with Henry Ford to produce the Ford-Ferguson 9N tractor. The three-point hitch soon became the favorite hitch attachment system among farmers around the world. This tractor model also included a rear Power Take Off (PTO) shaft that could be used to power three point hitch mounted implements such as sickle-bar mowers. This PTO location set the standard for future tractor developments.

Tractor configurations

Tractors can be generally classified as two-wheel drive, two-wheel drive with front wheel assist, four-wheel drive (often with articulated steering), or track tractors (with either two or four powered rubber tracks).

The classic farm tractor is a simple open vehicle, with two very large driving wheels on an axle below and slightly behind a single seat (the seat and steering wheel consequently are in the center), and the engine in front of the driver, with two steerable wheels below the engine compartment. This basic design has remained unchanged for a number of years, but enclosed cabs are fitted on almost all modern models, for reasons of operator safety and comfort. In some localities with heavy or wet soils, notably in the Central Valley of California, the "Caterpillar" or "crawler" type of tracked tractor became popular in the 1930s, due to superior traction and flotation. These were usually maneuvered through the use of turning brake pedals and separate track clutches operated by levers rather than a steering wheel.

Four-wheel drive tractors began to appear in the 1960s. Some four-wheel drive tractors have the standard "two large, two small" configuration typical of smaller tractors, while some have four large,

powered wheels. The larger tractors are typically an articulated, center-hinged design steered by hydraulic cylinders that move the forward power unit while the trailing unit is not steered separately.

In the early 21st century, articulated or nonarticulated, steerable multitrack tractors have largely supplanted the Caterpillar type for farm use. Larger types of modern farm tractors include articulated four-wheel or eight-wheel drive units with one or two power units which are hinged in the middle and steered by hydraulic clutches or pumps. A relatively recent development is the replacement of wheels or steel crawler-type tracks with flexible, steel-reinforced rubber tracks, usually powered by hydrostatic or completely hydraulic driving mechanisms. The configuration of these tractors bears little resemblance to the classic farm tractor design.

Engine and fuels

The predecessors of modern tractors, traction engines, used steam engines for power. Since the turn of the 20th century, internal combustion engines have been the power source of choice. Between 1900 and 1960, gasoline was the predominant fuel, with kerosene (the Rumely Oil Pull was the most notable of this kind) and ethanol being common alternatives. Generally, one engine could burn any of those, although cold starting was easiest on gasoline. Often, a small auxiliary fuel tank was available to hold gasoline for cold starting and warm-up, while the main fuel tank held whatever fuel was most convenient or least expensive for the particular farmer. Dieselisation gained momentum starting in the 1960s, and modern farm tractors usually employ diesel engines, which range in power output from 18 to 575 horsepower (15 to 480 kW). Size and output are dependent on application, with smaller tractors used for lawn mowing, landscaping, orchard work, and truck farming, and larger tractors for vast fields of wheat, maize, soy, and other bulk crops. Liquified petroleum gas (LPG) or propane also have been used as tractor fuels, but require special pressurized fuel tanks and filling equipment, so are less prevalent in most markets. In some countries such as Germany, biodiesel is often used. Some other biofuels such as straight vegetable oil are also being used by some farmers.

Transmission

Most older farm tractors use a manual transmission. They have several gear ratios, typically three to six, sometimes multiplied into

two or three ranges. This arrangement provides a set of discrete ratios that, combined with the varying of the throttle, allow final-drive speeds from less than one up to about 25 miles per hour (40 km/h), with the lower speeds used for working the land and the highest speed used on the road.

Slow, controllable speeds are necessary for most of the operations performed with a tractor. They help give the farmer a larger degree of control in certain situations, such as field work. However, when travelling on public roads, the slow operating speeds can cause problems, such as long queues or tailbacks, which can delay or annoy motorists in cars and trucks. These motorists are responsible for being duly careful around farm tractors and sharing the road with them, but many shirk this responsibility, so various ways to minimize the interaction or minimize the speed differential are employed where feasible. Some countries (for example the Netherlands) employ a road sign on some roads that means "no farm tractors". Some modern tractors, such as the JCB Fastrac, are now capable of much higher road speeds of around 50 mph (80 km/h).

Older tractors usually have unsynchronized transmission designs, which often require the operator stop the tractor to shift between gears. This mode of use is inherently unsuited to some of the work tractors do, and has been circumvented in various ways over the years. For existing unsynchronized tractors, the methods of circumvention aredouble clutching or power-shifting, both of which require the operator to rely on skill to speed-match the gears while shifting, and are undesirable from a risk-mitigation standpoint because of what can go wrong if the operator makes a mistake – transmission damage is possible, and loss of vehicle control can occur if the tractor is towing a heavy load either uphill or downhill – something that tractors often do. Therefore, operator's manuals for most of these tractors state one must always stop the tractor before shifting, and they do not even mention the alternatives. As already said, that mode of use is inherently unsuited to some of the work tractors do, so better options were pursued for newer tractor designs.

In these, unsynchronized transmission designs were replaced with synchronization or with continuously variable transmis-sions (CVTs). Either a synchronized manual transmission with enough available gear ratios (often achieved with dual ranges, high and low)

or a CVT allow the engine speed to be matched to the desired final-drive speed, while keeping engine speed within the appropriate speed (as measured in rotations per minute or rpm) range for power generation (the working range) (whereas throttling back to achieve the desired final-drive speed is a trade-off that leaves the working range). The problems, solutions, and developments described here also describe the history of transmission evolution in semi-trailer trucks. The biggest difference is fleet turnover; whereas most of the old road tractors have long since been scrapped, many of the old farm tractors are still in use. Therefore, old transmission design and operation is primarily just of historical interest in trucking, whereas in farming it still often affects daily life.

INTRODUCTION TO VETERINARY

Veterinary was founded many thousand years ago in relation with man's requirements. The word "veterinarius" is a Latin word. It means taking care of animals and treatment of livestock. The development of veterinary is connected with domestication of wild animals.

Veterinary Science is also called veterinary medicine and includes the prevention, diagnosis, and treatment of the diseases of domestic animals and the management of other animal disorders. The field also deals with those diseases that are intercommunicable between animals and humans. Farm animals are susceptible to various infectious diseases and may suffer from viruses and harmful bacteria, so animals should be examined by veterinary surgeons regularly in order to notice disease symptoms in time and take the necessary preventive and control measures. Such common animal diseases as mastitis, brucellosis, swine fever, anthrax, and leptospirosis can quickly spread and cause major losses among stock animals, so they must be controlled or prevented by veterinary surgeons.

Vaccination and immunization, sanitary measures, and the severe segregation, or quarantine of sick animals should be used by farmers and veterinary surgeons to prevent the spread of infectious diseases such as anthrax, bovine tuberculosis, brucellosis, canine distemper, and rabies. Sanitary control of animal housing and proper

pasture management are to eliminate any carriers of animal infectious diseases which can be easily transmitted by water and soil.

The pathologic changes in the body which follow disturbances in various organs or parts of organs disclose facts of great importance to the veterinarians.

Veterinary surgeons also treat parasitical infections, unsanitary conditions which may cause lower fertility in livestock, and nutritional disorders.

A veterinary surgeon's training must include the study of the basic preclinical disciplines of anatomy, histology, physiology, pharmacology, microbiology, bacteriology, virology, parasitology, and pathology. The clinical subjects of study may be divided into internal medicine, preventive medicine, surgery and clinical practice. Internal medicine includes the diagnosis and treatment of diseases as they affect animals. Preventive medicine should consider the aspects of disease prevention and control, especially such diseases that can be transmitted between animals and humans or diseases that may influence human health. Surgery includes wound treatment, fracture repair, the excision of body parts and the use of such techniques as radiology, anesthesiology, obstetrics, treatment of lameness, etc.

Veterinary depends on several disciplines. Knowledge of Physics is essential in understanding the function of the heart and blood vessels, the mechanics of respiration, the formation of images in the eye, and the transmission of sound waves in the ear.

Knowledge of Chemistry is indispensable in unraveling secrets of digestion and metabolism and in understanding the way in which oxygen and carbon dioxide are carried in the blood.

Physiology is the study of the phenomena presented by living organism. It is primarily a study of the function in the organs and the conditions which determine their function in the living animal.

To know the structure of the animal body veterinarians study Anatomy.

Veterinarians must get deep knowledge of Biological chemistry because it is the basis of clinical laboratory diagnostics and therapy.

Pharmacology is the scientific study of drugs and their use in the treatment of animal diseases and injuries.

Hygiene is the practice of keeping animals and areas clean in order to prevent illness and disease.

Veterinary and Animal husbandry are closely connected with each other. Animal husbandry includes the breeding of farm animals and their use. Farm animals are highly important sources of food for man. They are known to produce highly important products such as milk, meat and eggs. In addition, the skin of animals, down and feather of poultry and wool of sheep are used as raw materials to produce clothing and for many other purposes. The blood of animals is used in Pharmacology to obtain different drugs.

THE ANATOMY OF THE CATTLE

Cattle are raised as livestock for meat (beef and veal), as dairy animals for milk and other dairy products, and as draft animals (pulling carts, plows and the like). Other products include leather and dung for manure or fuel. In some countries such, as India, cattle are sacred. It is estimated that there are 1.3 billion cattle in the world today.

Cattle have one stomach with four compartments. They are rumen, reticulum, omasum, and abomasum, with the rumen being the largest compartment. The reticulum, the smallest compartment, is known as the “honey comb”. Cattle sometimes consume metal objects which are deposited in the reticulum and irrigation from the metal objects causing hardware disease. The omasum’s main function is to absorb water and nutrients from the digestible feed. The omasum is known as the “many plies”. The abomasums is like the human stomach; this is why it is known as the “true stomach”.

Cattle are ruminants. They have a digestive system that allows use of otherwise indigestible foods by repeatedly regurgitating and rechewing them as “cud”. The cud is then reswallowed and further digested by specialized microorganismus in the rumen. These microbes are primarily responsible for decomposing cellulose and other carbohydrates into volatile fatty acids that cattle use astheir primary metabolic fuel. The microbes inside the rumen are also able to synthesize amino acids from nonprotein nitrogenous sources, such as urea and ammonia. As these microbes reproduce in the rumen, older generations die and their carcasses continue on through the digestive tract. These carcasses are then partially digested by the cattle, allowing them to gain a high quality protein source. These features

allow cattle to thrive on grasses and other vegetation. The gestationperiod for a cow is nine months. A newborn calf weighs 25–45 kg (55 to 99 lb).Breeding stock usually lives to about 15 years (occasionally as much as 25 years).

THE ANATOMY OF THE CAT

Mouth. Cats have highly specialized teeth for the killing of prey and the tearing of meat: the premolar and first molar teeth. They present in canids, and are highly developed in felines. The cat's tongue has sharp spines, or papillae, useful for retaining and ripping flesh from a carcass. Cats use a variety of vocalizations for communication, including meowing, purring, hissing, growling, squeaking, chirping, clicking, and grunting. Their types of body language: position of ears and tail, relaxation of whole body, kneading of paws, all are indicators of mood.

Ears. Thirty-two individual muscles in each ear allow for a manner of directional hearing: a cat can move each ear independently of the other. Because of this mobility, a cat can move its body in one direction and point its ears in another direction. Most cats have straight ears pointing upward. When angry or rightened, a cat will lay back its ears, to accompany the growling or hissing sounds it makes. Cats also turn their ears back when they are playing, or to listen to a sound coming from behind them.

Legs. Cats, like dogs, are digitigrades. They walk directly on their toes, with the bones of their feet making up the lower part of the visible leg. Cats are capable of walking very precisely, because like all felines they directly register; that is, they place each hind paw (almost) directly in the print of the corresponding forepaw, minimizing noise and visible tracks. This also provides sure footing for their hind paws when they navigate rough terrain.

Claws. Cats have protractable claws. In their normal, relaxed position the claws are sheathed with the skin and fur around the toe pads. This keeps the claws sharp by preventing wear from contact with the ground and allows the silent stalking of prey. The claws on the forefeet are typically sharper than those on the hind feet.

Most cats have five claws on their front paws, and four or five on their rear paws. However, domestic and feral are prone to

polydactylyism, and may have six or seven toes. The fifth front claw is proximal to the other claws.

Skin. Cats possess rather loose skin; this allows them to turn and confront a predator or another cat in a fight, even when it has a grip on them. The particularly loose skin at the back of the neck is known as the scruff, and is the area by which a mother cat grips her kittens to carry them.

Skeleton. Cats have 7 cervical vertebrae, 13 thoracic vertebrae, 7 lumbar vertebrae, 3 sacral vertebrae, and 22 or 23 caudal vertebrae. The extra lumbar and thoracic vertebrae account for the cat's enhanced spinal mobility and flexibility, compared with humans. The caudal vertebrae form the tail, used by the cat as a counterbalance to the body during quick movements. Cats also have free-floating clavicle bones, which allow them to pass their body through any space into which they can fit their heads.

Head. The masseter is a great, powerful, and very thick muscle covered by a tough, shining fascia lying ventral to the zygomatic arch, which is its origin. It inserts into the posterior half of the lateral surface of the mandible. Its action is the elevation of the mandible (closing of the jaw).

The temporalis is a great mass of mandibular muscle, and is also covered by a tough and shiny fascia. It lies dorsal to the zygomatic arch and fills the temporal fossa of the skull. It arises from the side of the skull and inserts into the coronoid process of the mandible. It too, elevates the jaw.

The two main integumentary muscles of a cat are the platysma and the cutaneous maximus. The cutaneous maximus covers the dorsal region of the cat and allows it to shake its skin. The platysma covers the neck and allows the cat to stretch the skin over the pectoralis major and deltoid muscles.

Neck and Back. The rhomboideus is a thick, large muscle below the trapezius muscles. It extends from the vertebral border of the scapula to the mid-dorsal line. Origin, neural spines of the first four thoracic vertebrae, insertion, vertebral border of the scapula, action, draws the scapula to the dorsal.

Splenius is the most superficial of all the deep muscles. It is a thin, broad sheet of muscle underneath the clavotrapezius and deflecting it. It is crossedalso by the rhomboideus capitis. Its origin is

the mid-dorsal line of the neck and fasica. The insertion is the superior nuchal line and atlas. It raises or turns the head.

Serratus ventralis is exposed by cutting the wing-like latissimus dorsi. The origin is from the first nine or ten ribs, and from part of the cervical vertebrae. The insertion is the vertebral border of the scapula. It draws scapula forward, backward and against the body.

Serratus Dorsalis is medial to both the scapula and the Serratus Ventralis. Origin, apoeurosis following the length of the mid-dorsal line, insertion, dorsal portion of the last ribs, action, draws ribs cranial.

The intercostals are a set of muscles sandwiched between the ribs. They interconnect ribs, and are therefore the primary respiratory skeletal muscles. They are divided into the external and the internal subscapularis. The origin and insertion are in the ribs. The intercostals pull the ribs backwards or forwards.

Pectoantebrachialis muscle is just one-half inch wide, and is the most superficial in the pectoral muscles. Origin, manubrium of the sternum, insertion, in a flat tendon on the fascia of the proximal end of the ulna, action, draws the arm towards the chest.

The pectoralis major, also called, pectoralis superficialis, is a broad triangular portion of the pectoralis muscle which is immediately below the pectoantebrachialis. It is actually smaller than the pectoralis minor muscle. Origin,sternum and median ventral raphe, insertion, humerus, action, draws the arm towards the chest.

The pectoralis minor muscle is larger than the pectoralis major. However, most of its anterior border is covered by the pectoralis major. Origin, ribs 3–5, insertion, coracoid process of scapula, Action, tipping of the scapula, elevation of ribs 3–5.

The most posterior, flat, thin, and long strip of pectoral muscle is the xiphi- humeralis. It is a band of parallel fibers that is not found in humans, but in felines. Its origin is the xiphoid process of the sternum, the insertion is the humerus.

Trapezius covers the back, and the neck. They pull the scapula toward the mid dorsal line, anteriorly, and posteriorly.

Clavotrapezius, the most anterior of the trapezius muscles, is also the largest. Its fibers run obliquely to the ventral surface. Origin, superior nuchal line and median dorsal line, insertion, clavicle, action, draws the clavicle dor sal and towards the head.

Acromiotrapezius is the middle trapezius muscle. It covers the dorsal and lateral surfaces of the scapula. Origin, neural spines of the cervical vertebrae, insertion, in the metacromion process and fascia of clavotrapezius, action, draws the scapula to the dorsal, and holds the two scapulas together.

Spinotrapezius, also called thoracic trapezius, is the most posterior of the three. It is triangular shaped. Origin, neural spines of the thoracic vertebra, inser tion, scapular fascia, action, draws the scapula to the dorsal and caudal regions.

THE ANATOMY OF THE DOG

External anatomy is concerned with the study of such organs as muzzle, dewlap (throat, neck skin), shoulder, elbow, forefeet, croup, leg (thigh and hip), hock, hind feet, withers, stifle, paws, tail.

Physical characteristics. Like most predatory mammals, the dog has powerful muscles, a cardiovascular system that supports both sprinting and endurance, and teeth for catching, holding, and tearing.

The dog's ancestral skeleton provides the ability to run and leap. Their legs are designed to propel them forward rapidly, leaping as necessary, to chase and overcome prey. Consequently, they have small, tight feet, walking on theirtoes; their rear legs are fairly rigid and sturdy; the front legs are loose and flexible, with only muscle attaching them to the torso.

Dogs have disconnected shoulder bones that allow a greater stride length for running and leaping. They walk on four toes, front and back, and have vestigial dewclaws (dog thumbs) on their front legs and sometimes on their rear legs.

Sight. Like most mammals, dogs are dichromats and have color vision equivalent to red-green color blindness in humans. Different breeds of dogs have different eye shapes and dimensions, and they also have different retina configurations. Dogs with long noses have a “visual streak” which runs across the width of the retina and gives them a very wide field of excellent vision, while those with short noses have an “area centralis” – a central patch with up to three times the density of nerve endings as the visual streak – giving them detailed sight much more like a human's.

Some breeds have a field of vision up to 270°, although broad-headed breeds with short noses have a much narrower field of vision, as low as 180°.

Hearing. The frequency range of dog hearing is approximately 40 Hz to 60,000 Hz. Dogs detect sounds as low as the 16 to 20 Hz frequency range and above 45 kHz, and in addition have a degree of ear mobility that helps them to rapidly pinpoint the exact location of a sound. Eighteen or more muscles can tilt, rotate and raise or lower a dog's ear. Additionally, a dog can identify a sound's location much faster than a human can, as well as hear sounds up to four times the distance that humans are able to.

Smell. Dogs have nearly 220 million smell-sensitive cells over an area about the size of a pocket handkerchief. Dogs can sense odours at concentrations nearly 100 million times lower than humans can. The percentage of the dog's brain that is devoted to analyzing smells is actually 40 times larger than that of a human. Some dog breeds have been selectively bred for excellence in detecting scents, even compared to their canine brethren.

Modern dog breeds exhibit a diverse array of fur coats, including dogs without fur. Dog coats vary in texture, color, and markings, and a specialized vocabulary has evolved to describe each characteristic.

Tail. There are many different shapes for dog tails: straight, straight up, sickle, curled, cork-screw. In some breeds, the tail is traditionally docked to avoid injuries. It can happen that some puppies are born with a short tail or no tail in some breeds.