МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАЦІОНАЛЬНИЙ АВІАЦІЙНИЙ УНІВЕРСИТЕТ

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МЕТОДИЧНІ РЕКОМЕНДАЦІЇ З ВИКОНАННЯ КОНТРОЛЬНИХ РОБІТ ДЛЯ СТУДЕНТІВ ЗАОЧНОЇ ФОРМИ НАВЧАННЯ

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Методичні рекомендації розглянуті та схвалені на засіданні кафедри англійської філології і перекладу

Протокол № ____ від «___»_____2016 р.

Завідувач кафедри _____ Сидоренко С.І.

У 9 семестрі студентом має бути виконана <u>*контрольна робота*</u> (у формі реферату. Контрольна робота складається з 2-х частин: 1) переклад тексту з англійської мови українськоюта укладання **тематичного** англо-українського глосарію до тексту, обсягом *50 одиниць* (студент обирає один з десяти варіантів. Номер тексту повинен дорівнювати *сумі двох останніх цифр* номера залікової книжки студента); 3) переклад тексту з української мови англійською з укладанням **тематичного** українсько-англійського глосарію, обсягом *50 одиниць* (для усіх студентів однаковий). Переклад тексту повинен бути самостійним, еквівалентним та відредагованим. У випадку наявності двох однакових перекладів, контрольна робота обом студентам не зараховується. Комп'ютерний переклад текстів не зараховується.

Вимоги до форматування тексту: гарнітура шрифту – TimesNewRoman; розмір шрифту – 14 кегль; міжрядковий інтервал – 1; поля: ліве 2,5 см, інші – 1,5 см; нумерація сторінок внизу по центру; при наборі тексту потрібно розрізняти символи дефісу та тире, українські (російські) («») та латинські (“”) лапки. Прохання уніфікувати використання напівжирного шрифту та курсиву при виділенні прикладів та інших фрагментів тексту і не зловживати підкресленням.

I. Тексти для перекладу з англійської мови українською.

1. WHAT HAPPENS WHEN YOU GET TIRED?

Want to know how to fight fatigue so you can get more things done and enjoy life? Get tired more often! Strange as that sounds, investigators are finding that regular physical activity increases your working capacity about 20 per cent. In short, the more you do, the more you can do.

Much about fatigue has long been mysterious. But little by little scientists are beginning to fit together clues about what happens when we get tired. The results are enough to debunk some long-held theories — for example, that fatigue occurs simply because <u>of accumulation of a waste product in the muscles</u>.

We get our energy from the sun. It's captured and used by plants to combine <u>carbon dioxide</u> from the air and minerals from the soil into <u>carbohydrates</u>. We eat the plants and change the carbohydrates into glycogen-animal starch. Every time you bend an elbow or raise an eyebrow, the muscles involved are fueled by glycogen. But, along with energy, glycogen yields lactic acid.

Classic theory. Accumulate enough acid, so the classic theory went, and you get tired because muscle tissue becomes lethargic in an <u>acid medium</u>. But researchers have found that when you work, so do the adrenal glands. They produce secretions that buffer lactic acid. What little acidity remains stimulates breathing. And as you breathe in more <u>oxygen</u>, it helps dispose of the acid by oxidation.

Why exercise? Regular exercise does more than increase muscle size. At rest, muscles use 60 to 70 milliliters (thousandths of a quart) of oxygen per minute. In exercise, they need 3,000! The heartpumps harder to get more oxygen-carrying blood to the muscles, increasing <u>heartpumping efficiency</u>.

Also, reports Dr.Thomas Cureton of the University of Illinois, tiny blood vessels that penetrate muscles are opened wide, including many other wise not open at all-and <u>circulation</u> efficiency increases, makingfor greater strength and endurance.

Some investigators believe exercise is also needed to keep the adrenal <u>glands in shape</u>. One study, showing that when wild animals are domesticated their adrenals shrink, suggests that our adrenals may have been getting smaller as we have become ever more civilized, giving the glands less and less regular physical stimulation.

Fatigue and monotony. A British psychologist had eight drivers grind repeatedly around a two-mile city circuit-with radio on, then off. Registering devices on accelerator, brake, clutch, and steering wheel recorded a measure of driving efficiency. Results indicate that music from a radio helps reduce impairment in driving stemming from monotony and fatigue.

How come? The psychologist says the extra job of listening to the music lowers "emotional arousal in certain conditions by providing an alternative stimulus". In plain English: You're likely to get less angry with other drivers-and drive better, longer.

What's wrong with pep pills? One indication of nervous-system involvement in fatigue is the ability of such drugs as caffeine in coffee and amphetamine in "pep pills" to boost endurance by stimulating the nervous system. Airmen in World War II used amphetamine for extra stamina and alertness on long, dangerous missions. And when astronaut Gordon Cooper's automatic controls failed, he was ordered to take amphetamine so his reflexes would be sharp for manual re-entry.

But if amphetamine, medically prescribed for special situations, can be valuable, indiscriminate use is dangerous. Abusers may end up collapsing.

2. SILENT SEA ENGINE

In the silent world of underwater warfare, the slightest noise can bring sudden death to a submarine. The electronic ears of the enemy can detect conventional engines and screw propellers as far as 100 miles away.

A computer interprets the sounds and directs a deadly homing torpedo to their source in minutes. How do you go about maneuvering a 3, 260-ton nuclear submarine without making a sound? Two medical researchers have found the answer-revolutionary undersea propulsion unit dubbed the "sea engine".

The two men were looking for a method of simulating the flow of blood through the humanbody. They tried various, types of mechanical pumps without success. The pumping action was too irregular.

While investigating the effects of magnetic fields on weak salt solutions similar to blood, the two researchers stumbled across an interesting fact. They could make the electrically charged ions in such solutions move in one direction by applying a magnetic field in just the right way. Then they made a second important discovery: the moving ions dragged water molecules along with them so that the entire solution moved. The researchers suddenly realized that they had the making of a new type of pump. They quickly assembled an experimental model and found, as they had expected, that the device really worked. Their "pump" consisted of nothing more than an unimpressive collection of junk-box electronic components. Yet the instant they connected it to a source of electrical power, a weak salt solution inside it began to move. A number of tests were made and new models were constructed, some of which permitted, very accurate control over the quantity of liquid being pumped, and others which made the liquid move in a series of pulses, duplicating the pumping action of the human heart. Amazingly, the pumps could move a variety ofliquids-including ordinary tap water — without difficulty. Then a visiting scientist from the Office ofNaval Research suggested they try pumping seawater. The pump worked better than ever.

The sea engine is a form of electromagnetic pump, which is nothing new. Units working on thesame principle have been used to pump liquid metals such as sodium through nuclear reactors for coolant purposes. However, a pump had never before been constructed to move seawater-electronically, with no moving parts, with no sound. And that's what intrigues naval engineers.

The Navy problem.Nuclear-submarine skippers have had to develop a variety of ways of escaping detection. At times, they dive to fantastic depths where sub noises may be confused with other ocean sounds. Or they may sit quietly on the bottom and wait for the enemy to come to them. In any case, starting the engine may mean immediate destruction.

An electromagnetic pump large enough to propel a submarine would require a lot of electrical power, but this would present no problem on a nuclear submarine. A submarine would be equipped with two sea engines: one to port and one to starboard. Each engine would operate independently, the direction and force of its propulsive jet of seawater changed by the mere flick of a switch. In this way, the sub could move forward, backward, or turn by pumping water in one direction on one side and in the other direction on the other side.

Most likely, sea engines would be installed along with conventional high-speed screw engines for normal use. The sea engines would enable the sub to engage in silent warfare by gliding along the ocean bottom and maneuvering close to its prey.

How it works. The simplest form of sea engine consists of two metal-plate electrodes mounted parallel to each other inside a rectangular chamber called a "cannula". An opening at each end of the cannula permits seawater to flow between the electrodes. The cannula is mounted between the poles of a powerful electromagnet, so that the magnetic field is concentrated on the water between them.

When an alternating current is applied to the two electrodes, large numbers of ions-sodium and chloride ions in seawater-are immediately attracted to the water between them. These ions attempt to move back and forth between the electrodes. Their individual magnetic fields (each ion is surrounded by its own tiny electromagnetic field) are repelled, however, by the powerful external magnetic field. Many of the ions are thus forced to move sideways, away from the electrodes. As they move along, they drag water molecules with them, causing the water to move out of the cannula. More seawater enters from the other opening, producing a continuous flow.

Torpedoes and destroyers. There is every reason to believe that a sea engine will power a radically new type of torpedo. The ones we're using now produce a relatively loud sound, giving an alert enemy a chance to duck. A somewhat slower fish, powered by a silent sea engine using high capacity batteries, would change this.

Highly specialized types of surface ships, such as the hunter-killer destroyers, could also profit from periods of silent running with sea engines. How about the pumping of blood-the application of the electromagnetic pump? Experiments are currently under way to use a modified sea engine to temporarily replace the human heart during surgical operations. Another model may one day be used to pump waste from a patient's body during long operations.

3. THE MEANING OF THE PHOTOGRAPHS

On the basis of the sample provided by *Mariner IV* one can say that the number of large craters per unit area on the Martian surface and their size distribution resemble closely the size and distribution of craters on the high-lands of the moon [(see top illustration at right)]. The Martian craters have rims that rise about 100 meters above the surrounding surface and depths that extend several hundred meters below the rims. The crater walls slope at angles up to about 10 degrees. [If *Mariner IV's*sample of photographs is representative, there must be more than 10,000 craters on the surface of Mars.

Judging by the *Mariner IV's*sample Mars seems to have fewer craters of 10 kilometers in diameter and smaller than would be expected if their distribution in size were similar to that on the moon. Moreover,] there seems to be a tendency for the small craters to appear on the rims of large craters. This suggests that there may be something special about the composition or texture of the crater rims that resists the forces that tend to erode small craters when they are formed elsewhere on the Martian surface.

In some of the pictures taken deep in the Martian southern hemisphere one can see areas that seem to have a light covering of frost. One can also see that many of the craters, instead of being circular, are flattened along a portion of their circumference. This phenomenon, also observed in lunar craters, is believed to result from structural faults below the surface. In at least one picture (No. 11) a pronounced line, quite straight, intersects a crater and continues across the rim. This too might be caused by a fault. So far we have not been able to complete the computer processing needed to draw any conclusions from the paired red and green pictures, or to prepare them in a form suitable for combining their overlapping areas into a color picture.

A mystery of considerable interest is presented by the high light levels recorded near the limb of the planet in the first picture. Where we had expected to find a black sky, the sky was more than half as bright as the planet! The other pictures also show evidence of "fogging", as if the Martian atmosphere were enormously brighter and more extended than anyone had expected.

Our first thought was that the fogging represented some kind of defect in the optical system. We wondered, for example, if the surface of the telescope mirror could have been pitted by the impact of meteoritic dust, but this seems to be ruled out by the fact that the meteorite detector, fully exposed outside the spacecraft, received only a few hundred hits. We have also considered the possibility that volatile substances from the foam cushions used to protect the Vidicon tube might have whitened the black inside surface of the telescope tube and created internal reflections. We found, however, that we could not duplicate the fogging even by inserting white cardboard baffles in place of the black ones in the optical system.

Finally, we considered the possibility that the nickel compound that provides the top coat on the telescope mirror before it receives final polishing might have blistered after long exposure to the vacuum of space. We simulated blisters by putting drops of glue on a mirror but were still unable to duplicate the fogging seen in the *Mariner IV* pictures. We have tentatively decided that the cause of the fogging is really on Mars.] Recent models of the Martian atmosphere seem to suggest that tiny crystals of frozen carbon dioxide are present at all times even at great heights. Whatever the cause of the fogging in July 1965 it must have extended to at least 100 kilometers above the surface of the planet and therefore it may de distinguishable from the earth with careful observation.

Life on Mars?

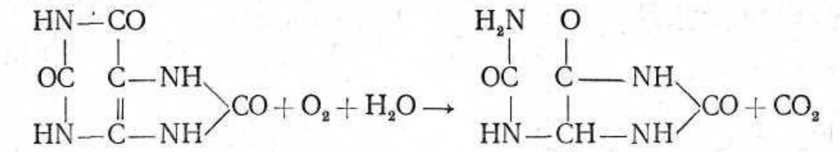
There was never any expectation that these photographs, with their coarse one-kilometer resolution, would settle the question of whether or not life exists on Mars. We and others [(notably Carl Sagan of the Smithsonian Astrophysical Observatory)] have examined many pictures of the earth taken by the Tiros and Nimbus weather satellites, whose narrow-angle cameras provide somewhat better resolution than the *Mariner IV* camera, and can find only one or two examples of a picture that shows a human work of engineering [(see illustration)]. And this is even when one knows what to look for. Still more surprising, the Tiros and Nimbus pictures fail to provide any evidence of vegetation, or seasonal changes in the earth's ground cover, except for snow and floods. It is certainly true that Mars looks inhospitable to life as we know it, but the question of whether there is life on the planet remains open.

After an experiment such as *Mariner IV*s is concluded one always has second thoughts. For example, it might have been better to photograph a different area, or to use a camera system that provided a wider field of view. It would have been desirable, of course, to have sent *Mariner B* with its two cameras. One would like to see the entire disk of Mars with, say, five-kilometer resolution. Still, there will be opportunities to make other photographs in the future. We feel satisfied that the first close-up views of Mars, made possible by the ingenuity and hard work of hundreds of people, have shown the importance of an exploratory approach to the study of our planetary neighbors, and that they will be remembered as among the outstanding photographs of the early space age.

4. THE ORIGIN OF MAN

Although the Darwin-Mendel-De Vries theory of evolution provides a general frame for understanding the emergence of man, it leaves open crucial questions of detail. Why have man, and, to a lesser extent, the higher apes so strikingly exceeded other animals In intellectual development? Or can one recognize distinct turning points of the development? A well-known fact of physiology, the possible evolutionary significance of which does not seem to have received attention, points strongly towards the second alternative.

Mammals are distinguished from other vertebrates and from insectsby their ability to produce the enzyme uridine, which oxidizes uric acid to allantoin by breaking up its purine ring scheme:



according to the scheme Uric acid Allantoin

The only exceptions to this are man and the higher apes, which have lost the capacity for synthesizing uridine and which, therefore, end the metabolism and catabolism of nucleoproteins with uric acid, instead of carrying it on to allantoin. Until recently, the Dalmatian dog (coach-hound) was also thought to be an exception. However, it has been found that this animal does possess sufficient amounts of uricase; it excretes uric acid merely because, owing to the effect of a simple recessive gene, no tubular re-absorption of uric acid from the glomerular filtrate takes place in its kidneys.

Uric acid had two remarkable properties. It is very sparingly soluble in water; meat-eating animals that lack uridine, therefore, have to maintain a steady high concentration of uric acid in their blood in order to eliminate the amount they produce. Moreover, uric acid, in common with other purines such as caffeine or theobrom-ine, is a cerebral stimulant. Consequently, animals that eat nucleoproteins but lack uridine are under constant influence of a powerful stimulant.

This circumstance may have played a decisive part in the intellectual development of the higher primates. The selective value of a small beneficial mutation of the associative mechanism of the brain must be very small, unless the animal uses its brain even when this is not urgently necessary; that is, unless it thinks about past experiences and future possibilities in times when there is no acute need for thinking. Such a tendency to philosophical reflexion must be very unusual in animals; even modern man has, in general, no irresistible addiction to mental work. A beneficial mutation of the associative mechanism of the brain, therefore, has only a poor chance of establishing itself in the species unless its selective value is strongly enhanced by the action of a cerebral stimulant such as is uric acid. The mutations that have led to the loss of uridine, then, may have been a crucial step on the way to the development of man.

In all probability the loss of uridine was not a sudden event due to a single mutation. Some monkeys seem to show a slightly impaired capacity for uridine production: this suggests a gradual assembly of the gene-constellation that has ultimately led to the almost complete absence of uridine. In the lower mammals, this assembly did not progress beyond a primitive stage, because the higher brain functions were relatively undeveloped, and the effects of their stimulation by uric acid could not counter-balance the physiological disadvantages of this compound. From a certain stage of the brain development onwards, however, the increment of viability due to uric acid must have changed its sign from negative to positive, and then the assembly of the uridine loss gene-constellation could progress hand in hand with the accelerated development of the brain due to the increasing level of uric acid concentration.

Can the viability-increment due to a stimulant be large enough to cause such momentous developments? Millions of the present generation owe their careers, and some even their lives, to caffeine or theobromine, taken during preparation for an examination, a negotiation, or during a strenuous car-drive. Uric acid, of course, is not so effective as coffee or tea, but its effect as a catalyser of mental development has extended over a million years, starting probably long before the Oligocene branching of the great orthograde primates. A widespread popular opinion associates the vigour and initiative of the populations of the wealthy industrial areas with their high meat consumption. In fact, it is quite likely that the ' pressure-of-life' diseases prevalent in the highly industrialized areas are, to a considerable extent, ' pressure-of-uric acid' diseases. Although not so effective as caffeine or theobromine, this stimulant can be a more powerful inhibitor of rest and recovery from work by its action extending over day and night.

5. BIOLOGY

Biology is the study of living things and their vital processes. The field deals with all the physicochemical aspects of life. As a result of the modern tendency to unify scientific knowledge and investigation, however, there has been an overlapping of the field of biology with other scientific disciplines. Modern principles of other sciences--chemistry and physics, for example--are integrated with those of biology in such areas as biochemistry and biophysics. Because biology is such a broad subject, it is subdivided into separate branches for convenience of study. Despite apparent differences, all the subdivisions are interrelated by basic principles. Thus, though it was once the custom to separate the study of plants (botany) from that of animals (zoology), and the study of the structure of organisms (morphology) from that of function (physiology), the current practice is to investigate those biological phenomena that all living things have in common. Biology is often approached today on the basis of levels that deal with fundamental units of life. At the level of molecular biology, for example, life is regarded as a manifestation of chemical and energy transformations that occur among the many chemical constituents that comprise an organism. As a result of the development of more powerful and precise laboratory instruments and techniques, it is now possible to understand and define more exactly not only the invisible ultimate physiochemical organization (ultrastructure) of the molecules in living matter but also how living matter reproduces at the molecular level.

Cell biology, the study of the fundamental unit of structure and function in a living organism, may be said to have begun in the 17th century, with the invention of the compound microscope. Before that, the individual organism was studied as a whole (organismic biology), an area of research still regarded as an important level of biological organization. Population biology deals with groups or populations of organisms that inhabit a given area or region. Included at this level are studies of the roles that specific kinds of plants and animals play in the complex and self-perpetuating interrelationships that exist between the living and nonliving world, as well as studies of the built-in controls that maintain these relationships naturally. These broadly based levels may be further subdivided into such specializations as morphology, taxonomy, biophysics, biochemistry, genetics, eugenics, and ecology. In another way of classification, a field of biology may be especially concerned with the investigation of one kind of living thing--e.g., botany, the study of plants; zoology, the study of animals; ornithology, the study of birds; ichthyology, the study of fishes; mycology, the study of fungi; microbiology, the study of microorganisms; protozoology, the study of one-celled animals; herpetology, the study of amphibians and reptiles; entomology, the study of insects; and physical anthropology, the study of man.

THE HISTORY OF BIOLOGY

There are moments in the history of all sciences when remarkable progress is made in relatively short periods of time. Such leaps in knowledge result in great part from two factors: one is the presence of a creative mind--a mind sufficiently perceptive and original to discard hitherto accepted ideas and formulate new hypotheses; the second is the technological ability to test the hypotheses by appropriate experiments. The most original and inquiring mind is severely limited without the proper tools to conduct an investigation; conversely, the most sophisticated technological equipment cannot of itself yield insights into any scientific process. An example of the relationship between these two factors was the discovery of the cell. For hundreds of years there had been speculation concerning the basic structure of both plants and animals. Not until optical instruments were sufficiently developed to reveal cells, however, was it possible to formulate a general hypothesis, the cell theory, that satisfactorily explained how plants and animals are organized. Similarly, the significance of Gregor Mendel's studies on the mode of inheritance in the garden pea remained neglected for many years, until technological advances made possible the discovery of the chromosomes and the part they play in cell division and heredity. Moreover, as a result of the relatively recent development of extremely sophisticated instruments, such as the electron microscope and the ultracentrifuge, biology has moved from being a largely descriptive science--one concerned with entire cells and organisms--to a discipline that increasingly emphasizes the subcellular and molecular aspects of organisms and attempts to equate structure with function at all levels of biological organization.

6.MICROECONOMICS

Microeconomics examines the economic behavior of agents (including individuals and firms) and their interactions through individual markets, given scarcity and government regulation. A given market might be for a *product,* say fresh corn, or the *services of a factor of production,* say bricklaying. The theory considers aggregates of *quantity demanded* by buyers and *quantity supplied* by sellers at each possible price per unit. It weaves these together to describe how the market may reach equilibrium as to price and quantity or respond to market changes over time. This is broadly termed demand-and-supply analysis. Market structures, such as perfect competition and monopoly, are examined as to implications for behavior and economic efficiency. Analysis often proceeds from the simplifying assumption that behavior in other markets remains unchanged, that is, partial-equilibrium analysis. General-equilibrium theory allows for changes in different markets and aggregates across *all* markets, including their movements and interactions toward equilibrium.

Macroeconomics

Macroeconomics examines the economy as a whole "top down" to explain broad aggregates and their interactions. Such aggregates include national income and output, the unemployment rate, and price inflation and subaggregates like total consumption and investment spending and their components. It also studies effects of monetary policy and fiscal policy. Since at least the 1960s, macroeconomics has been characterized by further integration as to micro-based modeling of sectors, including rationality of players, efficient use of market information, and imperfect competition. This has addressed a long-standing concern about inconsistent developments of the same subject. Macroeconomic analysis also considers factors affecting the long-term level and growth of national income. Such factors include capital accumulation, technological change and labor force growth.

Related fields, other distinctions, and classifications

Recent developments closer to microeconomics include behavioral economics and experimental economics. Fields bordering on other social sciences include economic geography, economic history, public choice, cultural economics, and institutional economics.

Another division of the subject distinguishes two types of economics. Positive economics ("what is") seeks to explain economic phenomena or behavior. Normative economics ("what ought to be," often as to public policy) prioritizes choices and actions by some set of criteria; such priorities reflect value judgments, including selection of the criteria.

Another distinction is between *mainstream economics* and *heterodox economics*. One broad characterization describes mainstream economics as dealing with the "rationality-individualism-equilibrium nexus" and heterodox economics as defined by a "institutions-history-social structure nexus."

The JEL classification codes of the Journal of Economic Literature provide a comprehensive, detailed way of classifying and searching for economics articles by subject matter. An alternative classification of often-detailed entries by mutually-exclusive categories and subcategories is *The New Palgrave: A Dictionary of Economics*.

Mathematical and quantitative methods

Economics as an academic subject often uses geometric methods, in addition to literary methods. Other general mathematical and quantitative methods are also often used for rigorous analysis of the economy or areas within economics. Such methods include the following.

Mathematical economics

Mathematical economics refers to application of mathematical methods to represent economic theory or analyze problems posed in economics. It uses such methods as calculus and matrix algebra. Expositors cite its advantage in allowing formulation and derivation of key relationships in an economic model with clarity, generality, rigor, and simplicity. For example, Paul Samuelson's book *Foundations of Economic Analysis* (1947) identifies a common mathematical structure across multiple fields in the subject.

7. CONTRACT LAW

The concept of a "contract" is based on the Latin phrase *pacta sunt servanda* (agreements must be kept). Contracts can be simple everyday buying and selling or complex multi-party agreements. They can be made orally (e.g. buying a newspaper) or in writing (e.g. signing a contract of employment). Sometimes formalities, such as writing the contract down or having it witnessed, are required for the contract to take effect (e.g. when buying a house).

In common law jurisdictions, there are three key elements to the creation of a contract. These are offer and acceptance, consideration and an intention to create legal relations. For example, in *Carlill v. Carbolic Smoke Ball Company* a medical firm advertised that its new wonder drug, the smokeball, would cure people's flu, and if it did not, the buyers would get £100. Many people sued for their £100 when the drug did not work. Fearing bankruptcy, Carbolic argued the advert was not to be taken as a serious, legally binding offer. It was an invitation to treat, mere puff, a gimmick. But the court of appeal held that to a reasonable man Carbolic had made a serious offer. People had given good consideration for it by going to the "distinct inconvenience" of using a faulty product. "Read the advertisement how you will, and twist it about as you will", said Lord Justice Lindley, "here is a distinct promise expressed in language which is perfectly unmistakable".

"Consideration" means all parties to a contract must exchange something of value to be able to enforce it. Some common law systems, like Australia, are moving away from consideration as a requirement for a contract. The concept of estoppel or *culpa in contrahendo* can be used to create obligations during pre-contractual negotiations. In civil law jurisdictions, consideration is not a requirement for a contract at all. In France, an ordinary contract is said to form simply on the basis of a "meeting of the minds" or a "concurrence of wills". Germany has a special approach to contracts, which ties into property law. Their 'abstraction principle' (*Abstraktionsprinzip*) means that the personal obligation of contract forms separately from the title of property being conferred. When contracts are invalidated for some reason (e.g. a car buyer is so drunk that he lacks legal capacity to contract) the contractual obligation to pay can be invalidated separately from the proprietary title of the car. Unjust enrichment law, rather than contract law, is then used to restore title to the rightful owner.

Tort law

Torts, sometimes called delicts, are civil wrongs. To have acted tortiously, one must have breached a duty to another person, or infringed some pre-existing legal right. A simple example might be accidentally hitting someone with a cricket ball. Under negligence law, the most common form of tort, the injured party could potentially claim compensation for his injuries from the party responsible. The principles of negligence are illustrated by *Donoghue v. Stevenson*. A friend of Mrs Donoghue ordered an opaque bottle of ginger beer (intended for the consumption of Mrs Donoghue) in a café in Paisley. Having consumed half of it, Mrs Donoghue poured the remainder into a tumbler. The decomposing remains of a snail floated out. She claimed to have suffered from shock, fell ill with gastroenteritis and sued the manufacturer for carelessly allowing the drink to be contaminated. The House of Lords decided that the manufacturer was liable for Mrs Donoghue's illness. Lord Atkin took a distinctly moral approach, and said,

"The liability for negligence… is no doubt based upon a general public sentiment of moral wrongdoing for which the offender must pay… The rule that you are to love your neighbour becomes in law, you must not injure your neighbour; and the lawyer's question, Who is my neighbour? receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour."

This became the basis for the four principles of negligence; (1) Mr Stevenson owed Mrs Donoghue a duty of care to provide safe drinks (2) he breached his duty of care (3) the harm would not have occurred but for his breach and (4) his act was the proximate cause, or not too remote a consequence, of her harm. Another example of tort might be a neighbour making excessively loud noises with machinery on his property. Under a nuisance claim the noise could be stopped. Torts can also involve intentional acts, such as assault, battery or trespass. A better known tort is defamation, which occurs, for example, when a newspaper makes unsupportable allegations that damage a politician's reputation. More infamous are economic torts, which form the basis of labour law in some countries by making trade unions liable for strikes, when statute does not provide immunity.

8. HISTORY OF MEDICINE

The earliest type of medicine in most cultures was the use of empirical natural resources like plants (herbalism), animal parts and minerals. In all societies, including Western ones, there were also religious, ritual and magical resources. In aboriginal societies, there is a large scope of *medical systems* related to religious thinking, cultural experience, and natural resources. The religious ones more known are : animism (the notion of inanimate objects having spirits); spiritualism (here meaning an appeal to gods or communion with ancestor spirits); shamanism (the vesting of an individual with mystic powers); and divination (the supposed obtaining of truth by magic means). The field of medical anthropology studies the various medical systems and their interaction with society, while prehistoric medicine addresses diagnosis and treatment in prehistoric times.

The practice of medicine developed gradually in ancient Egypt, Babylonia, India, China, Greece, Persia, the Islamic world, medieval Europe and early modern period in Persia (Rhazes and Avicenna), Spain (Abulcasis and Avenzoar), Syria/Egypt (Ibn al-Nafis, 13th century), Italy (Gabriele Falloppio, 16th century), England (William Harvey, 17th century). Medicine as it is now practiced largely developed during the 19th and 20th centuries in Germany (Rudolf Virchow, Wilhelm Conrad Röntgen, Robert Koch), Austria (Karl Landsteiner, Otto Loewi), United Kingdom (Edward Jenner, Alexander Fleming, Joseph Lister, Francis Crick), New Zealand (Maurice Wilkins), Australia (Howard Floery, Frank Macfarlane Burnet), Russia (Nikolai Korotkov), United States (William Williams Keen, Harvey Cushing, William Coley, James D. Watson), Italy (Salvador Luria), Switzerland (Alexandre Yersin), Japan (Kitasato Shibasaburo), and France (Jean-Martin Charcot, Claude Bernard, Louis Pasteur, Paul Broca and others). The new "scientific" or "experimental" medicine (where results are testable and repeatable) replaced early Western traditions of medicine, based on herbalism, the Greek "four humours" and other pre-modern theories.

The Sumerian god Ningizzida was the patron of medicine. In the image he is accompanied by two gryphons. It is the oldest known image of snakes coiling around an axial rod, dating from before 2000 BCE. A similar image with two snakes coiling around a rod is called the Caduceus and, although historically inappropriate, appears in the logo/emblem of a significant number of private (rather than professional or academic) medical practices.

The focal points of development of clinical medicine shiftedto the United Kingdom and the USA by the early 1900s (Canadian-born) Sir William Osler, Harvey Cushing). Possibly the major shift in medical thinking was the gradual rejection, especially during the Black Death in the 14th and 15th centuries, of what may be called the 'traditional authority' approach to science and medicine. This was the notion that because some prominent person in the past said something must be so, then that was the way it was, and anything one observed to the contrary was an anomaly (which was paralleled by a similar shift in European society in general - see Copernicus's rejection of Ptolemy's theories on astronomy). Physicians like Ibn al-Nafis and Vesalius led the way in improving upon or indeed rejecting the theories of great authorities from the past (such as Hippocrates, Galen and Avicenna), many of whose theories were in time discredited. Such new attitudes were made possible in Europe by the weakening of the Roman Catholic church's power in society, especially in the Republic of Venice.

Evidence-based medicine is a recent movement to establish the most effective algorithms of practice (ways of doing things) through the use of the scientific method and modern global information science by collating all the evidence and developing standard protocols which are then disseminated to healthcare providers. One problem with this 'best practice' approach is that it could be seen to stifle novel approaches to treatment.

Genomics and knowledge of human genetics is already having some influence on medicine, as the causative genes of most monogenic genetic disorders have now been identified, and the development of techniques in molecular biology and genetics are influencing medical practice and decision-making.

Pharmacology has developed from herbalism and many drugs are still derived from plants (atropine, ephedrine, warfarin, aspirin, digoxin, vinca alkaloids, taxol, hyoscine, etc). The modern era began with Robert Koch's discoveries around 1880 of the transmission of disease by bacteria, and then the discovery of antibiotics shortly thereafter around 1900. The first of these was arsphenamine / Salvarsan discovered by Paul Ehrlich in 1908 after he observed that bacteria took up toxic dyes that human cells did not. The first major class of antibiotics was the sulfa drugs, derived by French chemists originally from azo dyes. Throughout the twentieth century, major advances in the treatment of infectious diseases were observable in (Western) societies. The medical establishment is now developing drugs targeted towards one particular disease process. Thus drugs are being developed to minimise the side effects of prescribed drugs, to treat cancer, geriatric problems, long-term problems (such as high cholesterol), chronic diseases type 2 diabetes, lifestyle and degenerative diseases such as arthritis and Alzheimer's disease.

9. RISE OF BEHAVIORISM

Partly in reaction to the subjective and introspective nature of Freudian psychodynamics, and its focus on the recollection of childhood experiences, during the early decades of the 20th century, behaviorism gained popularity as a guiding psychological theory. Founded by John B. Watson and embraced and extended by Edward Thorndike, Clark L. Hull, Edward C. Tolman, and later B.F. Skinner, behaviorism was grounded in studies of animal behavior. Behaviorists shared the view that the subject matter of psychology should be operationalized with standardized procedures which led psychology to focus on *behavior*, **not** the mind or consciousness. They doubted the validity of introspection for studying internal mental states such as feelings, sensations, beliefs, desires, and other unobservables. In "Psychology as the Behaviorist Views It" (1913), Watson argued that psychology "is a purely objective experimental branch of natural science," that "introspection forms no essential part of its methods", and that "the behaviorist recognizes no dividing line between man and brute." Skinner rejected hypothesis testing as a productive method of research, considering it to be too conducive to speculative theories that would promote useless research and stifle good research.

Behaviorism reigned as the dominant paradigm in psychology throughout the first half of the 20th century, however, the modern field of psychology is largely dominated by cognitive psychology. Linguist Noam Chomsky helped spark the cognitive revolution in psychology through his review of B. F. Skinner's Verbal Behavior, in which he challenged the behaviorist approach to the study of behavior and language dominant in the 1950s. Chomsky was highly critical of what he considered arbitrary notions of 'stimulus', 'response' and 'reinforcement' which Skinner borrowed from animal experiments in the laboratory. Chomsky argued that Skinner's notions could only be applied to complex human behavior, such as language aquisition, in a vague and superficial manner. Chomsky emphasized that research and analysis must not ignore the contribution of the child in the aquisition of language and proposed that humans are born with an natural ability to acquire language. Work most associated with psychologist Albert Bandura, who initiated and studied social learning theory, showed that children could learn aggression from a role model through observational learning, without any change in overt behavior, and so must be accounted for by internal processes.

Existential-humanist movement

Humanistic psychology was developed in the 1950s in reaction to both behaviorism and psychoanalysis, arising largely from existential philosophy and writers like Jean-Paul Sartre and Søren Kierkegaard. By using phenomenology, intersubjectivity and first-person categories, the humanistic approach seeks to get a glimpse of the whole person and not just the fragmented parts of the personality or cognitive functioning. Humanism focuses on uniquely human issues and fundamental issues of life, such as self-identity, death, aloneness, freedom, and meaning. Some of the founding theorists behind this school of thought were Abraham Maslow who formulated a hierarchy of human needs, Carl Rogers who created and developed Client-centered therapy, and Fritz Perls who helped create and develop Gestalt therapy. It became so influential as to be called the "third force" within psychology (preceded by behaviorism and psychoanalysis).

10. PHYSICS

Physics is a science that deals with the structure of matter and the interactions between the fundamental constituents of the observable universe. In the broadest sense physics, which was long called natural philosophy (from the Greek *physikos*), is concerned with all aspects of nature on both the macroscopic and submicroscopic levels. Its scope of study encompasses not only the behaviour of objects under the action of given forces but also the nature and origin of gravitational, electromagnetic, and nuclear force fields. Its ultimate objective is the formulation of a few comprehensive principles that bring together and explain all such disparate phenomena.

Without the science of physics and the work of physicists, our modern ways of living would not exist. Instead of brilliant, steady electric light, we would have to read by the light of candles, oil lamps, or at best, flickering gaslight. We might have crude railroad locomotives and steamships, but we could not have the highly developed and tremendously powerful machines we do. We might have buildings several stories high, but there could be no hope of erecting an Empire State Building. We could not possibly bridge the Hudson River or the Golden Gate much less build a jet plane, talk on the telephone from New York to London, or watch a television show. The personal computer would be unimaginable.

All other natural sciences depend upon physics for the foundations of their knowledge. Physics holds this key position because it is concerned with the most fundamental aspects of matter and energy and how they interact to make the physical universe work. For example, modern physics has discovered how atoms are made up of smaller particles and how these particles interact to join atoms into molecules and larger masses of matter. Chemists use this knowledge to guide them in their work in studying all existing chemical compounds and in making new ones.

Biologists and medical men in turn use both physics and chemistry in studying living tissues and in developing new drugs and treatments. Furthermore their electrical equipment, microscopes, X rays, and many other aids and the use of radioactivity were developed originally by physicists.

Physicists have also led in bringing man to think in scientific ways. What we call the scientific method had its real beginnings some four centuries ago in many fields of knowledge. The most impressive of the early triumphs came in physics and in the application of physics to astronomy for studying the apparent and real motions of the sun, the moon, the planets, and the stars.

Galileo made the first real contribution by discovering the natural laws which govern falling bodies and the swinging of the pendulum. Then Kepler established the three laws which explain all the motions of the planets. Finally, Newton verified these results by establishing the law of gravitation, which applies invariably to all matter in the universe--as small as a grain of sand or as large as the sun.

This triumph of explaining a vast range of phenomena with a single law inspired workers in all fields of knowledge to trust scientific methods. Galileo, Kepler, and Newton also made contributions to the development of telescopes and thus gave astronomy a powerful instrument to work with.

There is no exact distinction between physics and other natural sciences because all sciences overlap. In general, however, physics deals with phenomena which pertain to all classes of matter alike or to large classes of matter as long as they remain free of chemical change.

One major subdivision of physics deals with the states of matter--solids, liquids, and gases--and with their motions. The pioneer achievements of Galileo, Kepler, and Newton dealt with solid masses of matter in motion. Such studies are a part of the subject of mechanics and belong to the subdivision of mechanics called dynamics, the study of matter in motion. This large topic includes not only the motions of stars and baseballs but also those of gyroscopes, of the water pumped by a fire engine (hydrodynamics), and of the air passing over the wings and through the jet engine of an airplane (aerodynamics).

The other great subdivision of mechanics is statics, the study of matter at rest. Statics deals with the balancing of forces with appropriate resistances to keep matter at rest. The design of buildings and of bridges are examples of problems in statics.

Other divisions of physics are based on the different kinds of energy which interact with matter. They deal with electricity and magnetism, heat, light, and sound. From these branches of physics have come clues which have revealed how atoms are constructed and how they react to various kinds of energy. This knowledge is often called the basis of modern physics. Among the many subdivisions of modern physics are electronics and nuclear physics.

Physics is closely related to engineering. A person who uses physical principles in solving everyday problems is often called an engineer. For example, electricity is one of the subdivisions of physics; one who uses the natural laws of electricity to help in designing an electric generator is an electrical engineer.

II. Текст для перекладу з української мови англійською.

Кількість концепцій **реформування системи охорони здоров'я** (ОЗ) в Україні продовжує зростати в геометричній прогресії. Не дивно, що проблема ОЗ має непогані перспективи на обговорення в режимі телешоу на найближчі років 10–15, успішно замінивши такі суспільні жуйки, як НАТО або друга державна мова.

Громадян можна тішити сподіваннями і говорити їм те, що вони хочуть чути, експлуатуючи ностальгію за «доступною, безкоштовною і якісною медициною» з одночасним відшкодуванням моральних і матеріальних збитків за хамське ставлення в **комунальних лікарнях** і **лікарські помилки**. Лікарів, презентуючи все нові й нові концепції, можна обнадіювати статусом державного службовця і водночас орієнтувати на ринкову зарплатню північноамериканських колег.

Тимчасом медичний істеблішмент разом з вищою політичною владою, підтримуючи увесь цей гамір, займатимуться своїми справами. **Керівництво медичних закладів**, виконуючи завдання політиків – створювати ілюзію удаваного благополуччя в медичній сфері, будуть визначати місце на ринку підлеглим лікарям; наповнювати ринок новими **штатними бюджетними одиницями**; самі собі визначати завдання і проблеми з метою отримання додаткових бюджетних асигнувань; шукати меценатів і спонсорів для вирішення «стратегічних державних» завдань, експлуатуючи образ подвижників, який їм створила держава.

Історія українських медичних реформ. Етапи великого шляху – від **інституту сімейного лікаря** до неприбуткових комунальних підприємств.

Сьогодні кількість людей, готових позитивно оцінити не те що результати, а хоча б напрямки діяльності держави в медичній сфері, досить мізерна. Серед реформаторських напрямків можна виділити 5 основних: 1) Інститут сімейного лікаря; 2) "**страхова медицина**"; 3) **лікарське самоврядування**; 4) **університетські клініки**; 5) некомерційні комунальні підприємства.

Інститут сімейного лікаря

Інститут сімейного лікаря може бути створений або ринком за кошти громадян, або державою за кошти бюджету. Ідея створити лікаря, який поєднає в собі кількох спеціалістів і зможе виконувати великий обсяг роботи за невеликі гроші, «чомусь» не вдалася. Треба сказати, що жоден із новостворених **медичних університетів** так і не наважився скористатися самоврядними повноваженнями й оголосити набір на навчання за спеціальністю «сімейна медицина», мабуть, передбачаючи «неабиякий» інтерес абітурієнтів.

Державі, щоб підготувати таких фахівців у запланованій кількості й забезпечити їх **матеріально-технічними ресурсами**, треба витратити не один річний бюджет країни. До того ж держава уже давно дезорієнтувалася в часі і просторі, наївно сподіваючись, що вона здатна навчити молодого фахівця бодай азів **хірургії**, **акушерства**, **кардіології**, **неврології** та ін. Ринок, який створений у «бюджетно-соціальній медицині», цього ніколи не допустить.

Сама ідея «сімейної медицини» має право на життя, як і будь-яка інша ідея, але треба врахувати таке: інститут сімейного лікаря загалом не є якоюсь уніфікованою моделлю для тих держав, у яких він є. В одних країнах цей інститут існує в системі координат державного сектору, в інших – у приватному секторі, і в обох випадках він не є предметом уваги політичної влади. Є країни, де сімейний лікар – це не місце першого працевлаштування молодого фахівця, а якщо так, то термін **інтернатури** значно довший, ніж з інших спеціальностей. Кожне суспільство має свій, відповідний до його ментальності, економічного розвитку і запиту, інститут сімейного лікаря.

Наш інститут сімейного лікаря – це продукт вітчизняних кабінетних мудреців, далеких від **медичної практики** та соціології, але зате дуже близьких до бюджетних коштів, така собі імітація діяльності.