



# KNOWLEDGE AND EDUCATION ON CD-ROM

## THE NEW LIEDER PROGRAM OF INTERACTIVE CD-ROM

We offer a new range of about 42 CD-ROM for interactive learning and teaching in school and education. All pictures and illustrations are taken from our own stocks to guarantee superior quality. Newly developed programs guarantee easy installation and unproblematic running of the program. Every CD comprises the following topics:

- Comprises a great variety of beautiful **diagrams, color photos, tables, anatomical pictures, electron and X-ray photographs, impressive life cycles, human photographs, landscape photographs, scenes, test data and results**, necessary for teaching the subjects.
- Comprises all necessary **photomicrographs of microscopic slides**, which can be observed by **five different steps of magnification** by using a „**MicroScope**“. The slides can be moved under this microscope and can be observed in all its parts.
- Comprises all necessary **drawings** matching the pictures, with **explanations** of all the parts.
- The same number of comprehensive **explanatory texts** to help understanding the pictures.
- A special **test program** to check the students' knowledge in several levels of difficulty. A variable number of random selected pictures have to be identified. After a successful run the students receive notes about their progress in learning. By repeating the test any success run will be revealed by the program.
- A comprehensive **index, a search function** and a comfortable **browser** for all pictures and texts on every CD-ROM.
- All pictures can be shown also in **full-screen size**, just by pressing the ENTER button.
- Special **accompanying material**, which enables evaluation of what has been seen, and creative learning is an important part of the program. **Drawings, sketch- and worksheets** are supplied for many of the pictures on the CD. They are stored in **full printing quality (high resolution of 300 to 600 dpi)**. After printing the drawings may be supplemented or colored. In addition, the worksheets – which are allowed to be copied – can be used as **accompanying material for class tests**.
- The novel **demo program** features the functionality to start a self-running demo of the program in sequential or random order. A sophisticated **presentation mode** allows the user to prepare a collection of chosen pictures for an impressive full-screen presentation.
- The complete set of images on this CD can be displayed in **thumbnail view** for a comprehensive overview of all available material. Thus, the user is also able to compile pictures around topics of special interest for the classroom.
- A comprehensive **index**. The entire set of material, that is, pictures, supplemental texts and slides, and drawings, are accessible via the main program's dropdown-menu Tools – „Search picture...“ or „Select picture“.
- The texts will be provided in **up to five languages** (English, German, French, Spanish and Portuguese) by pre-selection when starting the program. The program surface is adapted to the well-known „**WINDOWS™-LOOK**“.
- All pictures and texts can be **printed** by the user.
- The CD works with all Windows versions (WINDOWS™ 95, 98, NT, 2000, XP, VISTA and Windows7). The resolution is **960 x 640 or higher for superior quality**. Full color representation with **over 1 Million colors** (depending on the screen). Optionally the CD runs also on Power-Mac G4 and higher with WINDOWS™ emulation.
- The size of the **desktop** and the **windows for texts and pictures** can be scaled and adapted to the requirements of the user.

### INTERACTIVE EDUCATIONAL CD-ROM FOR THE SERIES A, B, C, D.

Our new amazing CD-ROM for the MULTI-MEDIA PROGRAM SCHOOL-SETS A, B, C, D of **BIOLOGY** comprise all necessary **photomicrographs of microscopic slides**, which can be observed by different magnifications by using a „**MicroScope**“. Beautiful **color drawings** matching the slides, with detailed **explanations** (See page 3–14).



CD050 **MICROSCOPIC BIOLOGY - Set A**  
Photomicrographs, diagrams, explanations, test program and teaching material to School Set no. A. *Comprising about 240 pictures and 1175 texts*



CD060 **MICROSCOPIC BIOLOGY - Set B**  
Photomicrographs, diagrams, explanations, test program and teaching material to School Set no. B. *Comprising about 570 pictures and 2835 texts*



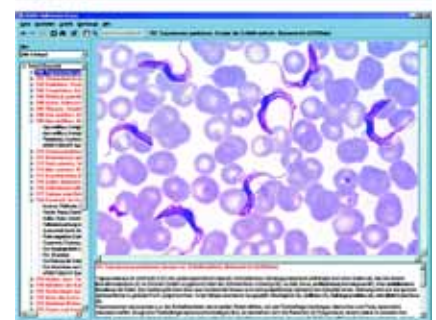
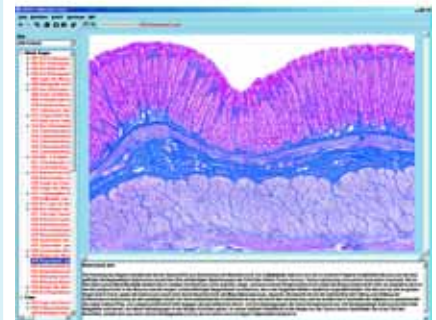
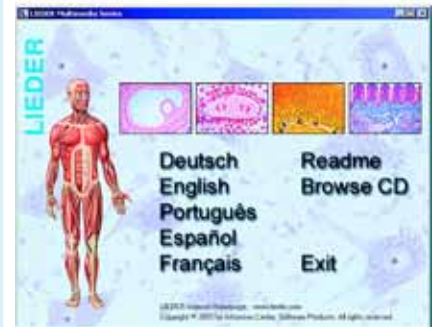
CD070 **MICROSCOPIC BIOLOGY - Set C**  
Photomicrographs, diagrams, explanations, test program and teaching material to School Set no. C. *Comprising about 400 pictures and 1960 texts*



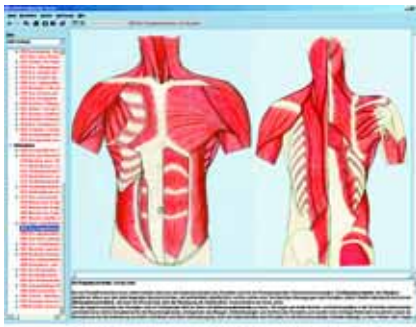
CD075 **MICROSCOPIC BIOLOGY - Set D**  
Photomicrographs, diagrams, explanations, test program and teaching material to School Set no. D. *Comprising about 440 pictures and 2125 texts*



CD085 **MICROSCOPIC BIOLOGY - Set A, B, C and D together.**  
All 4 CD-ROM can be copied into one big file during installation, *providing access to more than 2.200 pictures and 8.100 texts*

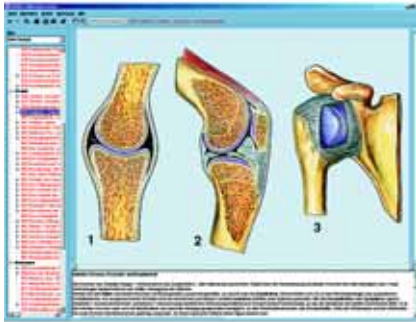


## THE NEW LIEDER PROGRAM OF INTERACTIVE CD-ROM



### CD111 Human Skeleton, Musculature and Apparatus of Movement

The skeleton and musculature make up the body's support and movement apparatus. These two components work both ways: the skeleton is essential for the execution of movements and the muscles equally essential in supporting functions. The skeleton is described as the passive part of the apparatus of movement, while the muscles rank as the active part. Connective and fibrous tissue. Tendons. Cartilage. Bone cells. Haversian lamellae, interstitial lamellae. Bone tissue structure, diagram. Hollow bones. Bone marrow. The skeleton as a whole, its functional arrangement and individual parts. Skeleton, full frontal and rear views. Joints. Vertebral column. Thorax. Pectoral girdle. The limbs. Skeleton of the hand. Pelvis. Knee joint. Menisci. Skeleton of the foot. Ankle joint. The skull, front and side views. Skull dissected in its constituent bones. X-ray pictures of a bone dislocation and of a bone fracture. Full front and rear views of human musculature with twelve partial views of muscles. Fine structure of muscles. Capillary blood vessels in the muscles. The sensory and motor innervation of muscles (muscle spindles and motor end plates). Muscle efficiency. Pronation and supination muscles.



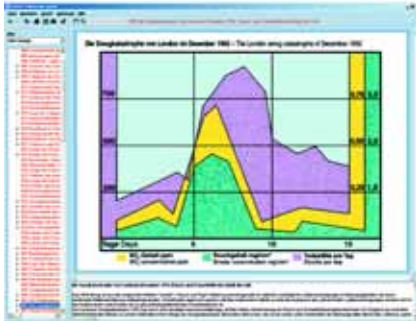
### CD112 Feeding Organs and Metabolism in the Human Body

Proteins, carbohydrates and fats as components of our nutrition. Minerals and vitamins. Nutrient entails food-stuff intake, digestion and resorption. Health through a balanced diet. Mouth, gullet and esophagus. Tooth forms. Tooth development. Tooth renewal. Milk-teeth and permanent teeth. Cavity-causing bacteria. Salivary glands: structure, location and function. Human stomach, cardia, fundus, pylorus. Function of the gastric glands. Intestine and digestion process. Location and points of support of the digestive organs. Intestine wall layers, villi, crypts, glands, fine structure of the intestinal villus. Human large intestine (colon). Digestive enzymes as organic catalysts. Constructive metabolism (anabolism) and destructive metabolism (catabolism, conversion to energy) Function of human liver and pancreas. The liver's glandular character and its function. Affections of the pancreas, function of islets of Langerhans. Insulin and diabetes. Function of human urinary organs: kidneys, ureter and urinary bladder. Detoxification of the body by the kidneys as a fundamental, vital process. The human body water and salt budget.



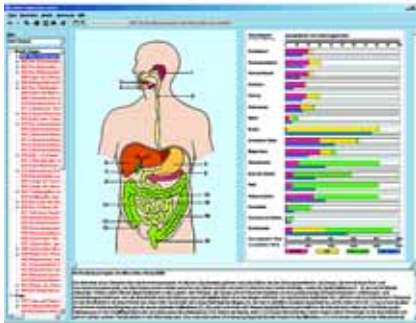
### CD113 The Human Respiratory and Circulatory Systems, the Human Heart

The pathways through which oxygen reaches the cells varies from organism to organism. In the case of unicellular beings, oxygen diffuses directly from the environment into the cell. In the case of higher organisms, including humans, a transportation system in the body distributes oxygen taken from the environment by a specialized organ (gills, lungs). Nose and nostrils. The larynx as respiratory and voice organ. Windpipe (trachea). Lung position and structure. Alveoli. Blood irrigation. Gaseous exchange. Volume of air respired. Regulation of breathing. Lung diseases. Damage of the breathing organs caused by environmental factors. Blood as mediator between the cells in the body and the environment. Using the circulatory pathways, blood transports different substances: nutrients, respiratory gases, intermediate and end products of metabolism, active substances and substances of the immune system. Blood components. Blood groups. Blood clotting. Antibodies. Rhesus intolerance. Lymphatic system. The human immune system and its functions. Anatomy of the heart, cardiac valves, heart muscles, functions and impulses. Electrocardiogram. Blood circulation. Arteries, veins and capillaries. Regulation of blood pressure, measuring blood pressure. Exchange of substances between capillaries and tissues.



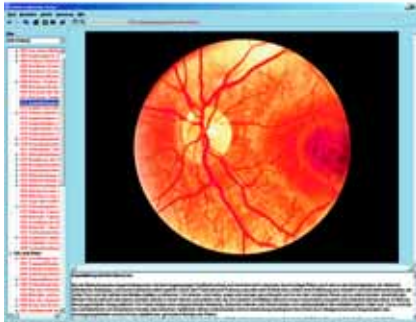
### CD114 Nervous System and Transmission of Information Part I

Introductory CD for the nervous system. View of the entire human nervous system. Occurrence of the typical nerve cells in the human nervous system. Fine structure of a neuron, composition of the nerve, motor end plates, glial cells, nerve cells and nerve tissue. Neuron, ganglion, centers, reflex arcs, automatism. Embryonic development of the human nervous system. Neural plate, neural groove, formation and closure of the neural tube. Description of the development of different nervous systems of invertebrates and vertebrates facilitates understanding of the human nervous system. Formation of the neopallium from concentric growth rings. Phylogenetic tree of mammalian brain convolutions. Connection between brain sensory and motor nerves and various body areas. Development of the thalamus into a relay station. Progressive concentration and differentiation in the brain, component parts and their relation to each other. Increase in organizational complexity.



### CD115 Nervous System and Transmission of Information Part II

The human central, peripheral and autonomic nervous system. Spinal cord: structure and function. Function of gray and white matter. Diagram of reflex connections. Examination of human reflexes and of diseases affecting the nervous system: polio, syphilis, sclerosis, paraplegia. Embryonic development and hierarchical structure of the brain. Structure and function of brain stem, cerebrum and cerebellum. Course of typical sensory and motor tracts. Perception, conduction and transmission of information. Conscious and unconscious movement control. The brain is simultaneously connecting and controlling organ: for that reason, information perception, conduction and transmission are treated in a special section: resting potential at the axon sheath and its change. Transmission of information over the synaptic gap. Types of synapse. Stimulus propagation along the axon. The brain's blood supply: as the controlling organ of our body is the brain the biggest consumer of energy. The blood-brain barrier. Brain stem, hindbrain and cerebellum. Brain lesions (diving accident, stroke). The autonomic nervous system, antagonistic effect between the sympathetic and parasympathetic part. Regulation of body temperature. Control of the emptying of the urinary bladder, transmitter and inhibiting substances at synapses and motor end plates.



### CD116 Sense Organs as a Window to the World

The sense organs have the task of furnishing information to the individual about himself and his environment. The ability to perceive stimuli and react to them is, together with the capacity for movement, nourishing oneself and reproducing, one of the primordial characteristics of living protoplasm. Even amoebae react to touch and light, as well as to chemical and temperature stimuli. Over the course of evolution, first some individual cells and then complex organ systems specialized in perceiving and processing stimuli. The nature of light. Eye and retina structure. Accommodation and adaptation. Image formation, movement vision, spatial vision (depth perception). Connection mechanisms in the retina and the brain. The physiological-psychological components of visual perception. Ocular affections. Optical illusions. Color vision and color blindness. Colors and psyche. Ear and hearing. Formation of sound waves. Development and structure of the human ear. Middle ear, inner ear, cochlea, organ of Corti. Directional hearing, hearing centers. Structure of the labyrinth, perception of rotation and spatial orientation. The chemical senses. The sense of smell. Location of the olfactory region. Nose conchas and olfactory epithelium. The sense of taste. The tongue's tasting areas. Papilla foliata, vallate papilla and fungiform papilla, fine structure. The skin as organ of touch. touch corpuscles, warmth and cold receptors, sense of temperature and thermal receptors. Pressure receptors. Sensitivity differences caused by touch stimulation. Conscious awareness of the position and muscle movements. Muscle spindle and Golgi tendon apparatus. Processing of self-awareness information.

### CD117 Reproduction and Sex Instruction

Reproduction serves for the preservation of the species. The number of germ cells must balance losses caused by environmental factors (predators, climate, catastrophes), so that the number of reproductive individuals remains constant within certain parameters. The CD provides a vivid introduction into the biology of reproduction from unicellular organisms through to mammals, providing detailed representations of human reproduction and

furnishing other teaching material for sexual instruction. Sexual and asexual reproduction. Fertilization of the ovum and fusion of both haploid nuclei. The different types of egg cells and the corresponding types of cleavage. Gastrulation, neurulation, formation of germ layers. Examples of organ development. Structure and function of male and female sexual organs. Testis, epididymis, spermatogenesis, spermatozoa. Structure of the uterus wall. Menstruation cycle and fertilization. Changes in uterine lining (endometrium). Ovulation, admission of the ovum into the fallopian tube, fertilization, development in the fallopian tube and embedding in the endometrium. Growth of the foetus in the uterus. Embryonic and maternal circulation. Foetus in the uterus, placenta, umbilical cord, amnion. Developed foetus in the womb. Start of the birth process, entrance of the amniotic sac into the birthing canal and birth are described.

#### CD118 Hormones, Hormone System and Control

Hormones are substances produced chiefly by the endocrine glands. They are brought by the blood stream to the areas of the body where they exert their effect and influence through ferments the most important vital processes, such as metabolism, development and growth. They adapt the body to different environmental conditions and safeguard the preservation of the species. Alterations of hormone budgets can have serious physical and psychological consequences. Nature and function of hormones. Thyroxin, adrenaline, insulin, sexual hormones, hormones of the hypophysis. Effects of castration. Human dwarfism, gigantism, acromegaly and obesity. The thymus. Development of hormone glands. Control of hormone release. Interaction between releasing and gonadotropic hormone. Feedback control of peripheral hormones. Influence on gene activity, protein synthesis, neurosecretion, second messenger, cascade mechanism. Dovetailed operation of different hormones, inhibiting and stimulating factors. Synthetic hormones. Regulation of blood sugar content. Stress, heart infarct, animal production, anabolica, pills, insect hormones, plant hormones, auxin.

#### CD120 Cytology and Molecular Biology

In cytology and molecular biology, cell nuclei and chromosomes are conspicuous structures. Their role in cellular activity, their function and importance in heredity and cell division, as well as aspects of molecular biology will all be discussed. This CD offers a wide range of images and text covering the multiple types of nuclei and chromosomes, including images of mitosis and polyploidy. Typical animal cell and typical plant cell. Living nuclei, nuclear forms and functions. Giant chromosomes. Polyploid nuclei. Fine structure of cell nucleus. Structure of chromosomes. Mitosis. Individuality of chromosomes. Chromosome structure, gene location (loci), reduction division, crossover and chiasmata, gene expansion and arrangement, replication. Proving the material structure of the gene. Structural properties of DNA. Identical replication as a cause of hereditary constancy. DNA, RNA and protein synthesis as causes of character formation. Genetic code and molecular mechanisms in mutations. Didactic guiding concepts: relations between structure and function on the molecular level. Explanation of genetic observations through molecular properties and reactions. The findings illustrated through the hypotheses, methods and experiments that led to those findings.

#### CD124 Cell Division (Mitosis and Meiosis)

A fundamental feature of all living creatures is that their organism grows. The actual growth of multicellular organisms results from the increase in the number of cells. Cell divisions make it possible for a single fertilized egg cell to give rise to millions and billions of cells. In the process, chromatin, as carrier of hereditary information, is duplicated, then halved in a highly accurate manner and then transferred to both daughter cells. The complex process of meiosis, the reduction division. Through meiosis not only is the number of chromosomes halved, but also the utterly important rearrangement of chromosome sets and the exchange of segments („crossing over“ process) both take place. The process of cell division is explained through classical examples of known animals and plants. Fine structure of the cell and its nucleus. The sequence of a normal cell division (mitosis) in chronological steps. Resting nucleus. Contraction, division and separation of the daughter chromosomes. Recombination of hereditary traits and reduction in the number of chromosomes through meiosis. Primordial sex cells. Entering of a sperm in the egg cell (ovum). Prophase, first and second meiosis. Dismissal of the sperm's flagellum (tail). Mixing of male and female chromosome sets. Translation of chromosomes to egg nucleus. Mature egg cell with male and female pronuclei. Fertilization, cleavage, embryo formation. Schematic representation of all phases. The slides, colored by means of a special staining technique, depict the individual cell structures in contrasting colors.

#### CD125 Mendelian Laws, Modification and Mutation

In order to establish the fact that heredity is governed by laws, it is necessary to mate living beings that exhibit certain differences from each other. The first experiments in this regard were performed by Augustinian priest Gregor Mendel in the 1860's on the garden of his monastery in Brunn. He crossed different strains of peas and kept track of hereditary transmission of particular characteristics in hundreds of plants over a number of generations. He thus found significant number rules and could thereby gain fundamental insights into the nature of heredity. The term „variability“ groups all those alterations in living beings that, on account of not being hereditary, fall within the category of „modifiability“. By contrast, alterations that can be passed on through heredity all called mutations. There is no doubt that changes in the hereditary makeup, i.e. mutations, made evolution possible in the first place.

#### CD126 Heredity and Genetics of Man, Part I

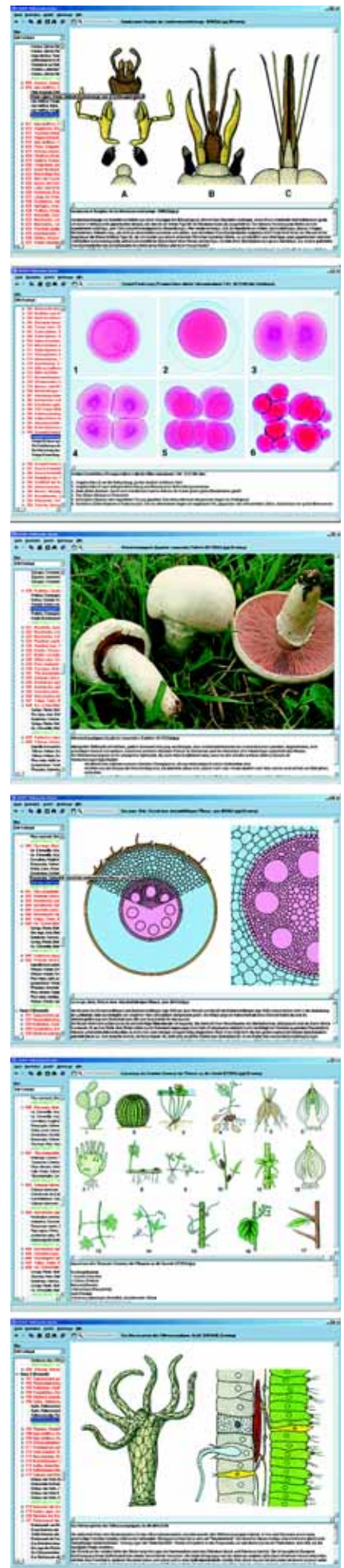
The basis of both CD's in this series is the range of newest findings in the field of human genetics. As an introduction, the basic knowledge on formal genetics is first imparted, illustrated and explained using many examples from medical genetics. Detailed description of hereditary transmission: Autosomal dominant inheritance, autosomal recessive mode of inheritance, X-chromosomal inheritance, multifactorial and mitochondrial inheritance. **Part 2** shows the different types of human tissue cultures, sex chromatin in both normal and pathological numbers of gonosomes through the analysis of Barr bodies, drumsticks and F-bodies. Analysis of metaphase chromosomes by various banding techniques. Chromosomal aberrations and their phenotypic consequences. Secondary chromosomal aberrations following exposure to clastogens and repair defects. Examples from tumour cytogenetics.

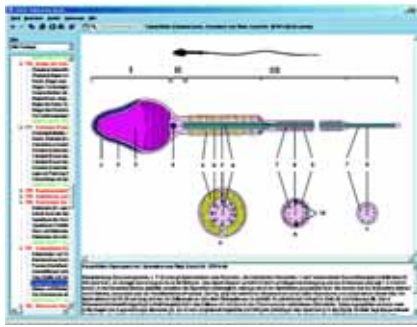
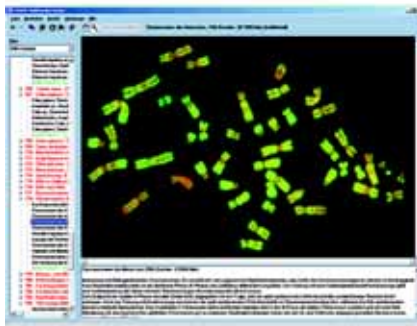
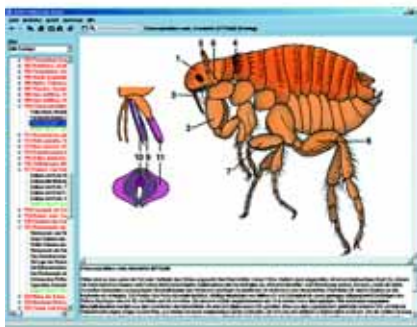
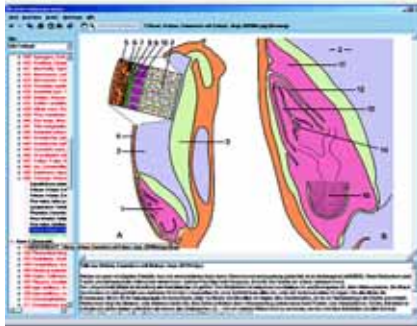
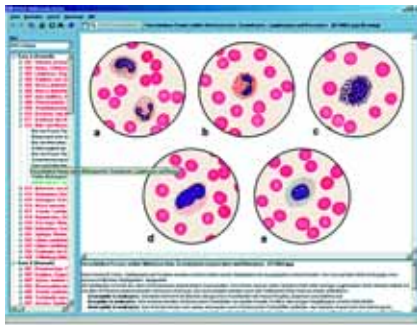
#### CD127 Heredity and Genetics of Man, Part II

Introduction to the principles of molecular genetics. The focus lies on the application of new techniques in medical genetics and in genetic counseling. Furthermore, subject matters such as population genetics, mutations, imprinting, blood group systems and appearance of tumors will be discussed. Subject matters in the last section include principles of genetic counseling and prenatal diagnostics, biopsy of chorionic villi, amniocentesis (fetal blood sampling). Reasons for seeking genetic counseling, effects of damaging to the fetus, risk calculation, consanguinity, genetics of behavior, and many examples derived from findings in research on twins and the genetic trees of trait bearers. New, extraordinarily high-quality images facilitate visual instruction, while detailed accompanying texts place this series at the highest level of modern teaching standards.

#### CD128 The Origin of Life and Evolution

An unique CD of life-science. Evolution's road from „no-life“ to life - stellar, chemical and organic evolution. Temporal course of evolution. Formation of celestial bodies and rise of chemical elements. Apparition of prokaryotes. Abiotic synthesis of amino acids, oligopeptides, polypeptides, purine and pyrimidine bases and nucleic acid sequences. Polynucleotide aggregates. Evolutionary stages of metabolism: fermenting, breathing, photosynthesizing prokaryotes. Primordial soup. Hypercycle according to EIGEN. Precambrian evidences of life. Evolution from prokaryotes to the plant and animal kingdoms. Spontaneous generation theories and findings. Phylogenetic schema for the five organic phyla. Endosymbiont hypothesis. Rise of multicellular organisms. Theory of gas-





traea, notoreunalia-gastroneuralia and coelom. Conquest of land. The saurians. Geological times. The „geologic clock“. Foundations, mechanisms and course of the evolution of the plant and animal kingdoms. Evolutionary pointers. Morphological homologies. Bridging species. The Archaeopteryx. Evolution in terms of geography, ontogeny, biochemistry, and animal behavior. Parallel evolution. Biogenetic law according to HAECKEL. The theories of Lamarck and Darwin. Natural selection and selection induced by man. Isolation. Gene shift. Adaptive radiation. Continental drift. Principles of speciation. Ontogenic spirals. Genetic landscape. Cultural development of man, evolution of languages. Tables of geologic formations. Recreation of prehistoric landscapes.

#### CD129 Evolution in Examples

This CD provides exceptionally instructive graphic material on morphologic and anatomical aspects shedding light on evolution and phylogenetics in the animal kingdom. Three fundamental physical manifestations are covered: stepwise increase in organizational complexity, commonality of basic physical structures and the existence of rudimentary organs. Starting with the work of Charles Darwin, studies of species formation on isolated volcanic archipelagos have become master examples of research in evolution. The fauna in isolated habitats, such as the Galapagos islands, plays a particularly important role as a source of indirect evidence on the workings of evolution. The combined effect of isolation, selection, occupation of niches, gene drift and mutation can be appreciated in a most graphic manner. Taking the unique flora of the Canary islands as an example, such evolutionary events are reviewed as promoter effects, preservation of paleoendemic plants, the effects of separation and isolation, generation of species through adaptive radiation, selection and nestling-down processes, analogy and homology. The Canary islands, together with the Galapagos islands and the Hawaii group, ranks as a „Museum of Evolution“.

#### CD131 Embryology and Development

Those seeking to understand the physical structure of an animal must necessarily become acquainted with the development from egg cell to finished animal first. This CD shows the different stages of ontogenesis through the classical examples of sea urchin, frog and chicken, documenting the development of these animals from the egg through cleavage to germ layers to the finished organism. Precise, clear text and illustrations enable the user to quickly gain an understanding of embryology processes.

#### CD132 Our Environment, Threats and Protection

The relentless advance of technology in nearly all areas of life, together with consequences that more often than not exert an influence on our natural make-up, represent a steadily increasing threat to the environment. Comprehensive environmental protection is therefore urgently needed. The new school curricula reflect this need, by including chapters on „Environment, Environmental Threats, Environmental Protection“. This CD attempts to provide a vivid support to such classroom work. Based on representative examples in the areas of Landscape, Soil, Water and Air, it shows which activities threaten the make-up of our natural environment and how the resulting perils can be confronted.

#### CD133 Our Waters, Pollution, Protection and Recycling

In these days, it is scarcely possible to bathe safely in lakes, streams and rivers because of the steadily increasing contamination of surface waters with waste and sewage. In addition, technological demands also put a strain on our „aquatic landscape“. This entirely revised CD provides useful examples and deals with the resulting perils, as well as with general questions regarding contamination and purification of bodies of open water. The meaning of the analytical controls applied is discussed, together with wastewater purification methods, nature-tailored development of water bodies and lake rehabilitation measures. Bodies of water and streams in the cultural landscape. Water testing and water monitoring. Nature-tailored development. Degrees of water quality. Straightening of river courses. Ground water table decrease. Introduction of wastewater. Saprobic index. Eutrophication. Acidification. Biocide enrichment. Feeding chain. Dying water. Production of drinking water. Lake cleaning and rehabilitation. Water treatment plants: structure and function. Fully biological activated-sludge water clarification plant.

#### CD134 The Forest as a Habitat

An intact, healthy landscape should boast a forest kept in as nearly a natural state as possible, with the corresponding variety in its moss, herb, shrub and tree layers still intact; this is surely not the case in most forests existing today. Woodlands are rightly dubbed „green lungs“ because of their oxygen output through photosynthesis. A forest, with its typical plant cover, is also a habitat for many animals. The importance of woods for man resides mostly in their water storage and air purification capabilities. Damaging a forest, therefore, constitutes a major environmental threat. The forest as an ecosystem, forest animals and plants, forest layers, forests through the seasons, forest functions, forests and residential areas, air exchange cycle, the forests as bulwark against weather, protecting forest animals, rejuvenating the forest, offenses against forest law, consequences of deforestation, threats affecting woodlands, erosion, effects of acid rain, dying forests, bioindicators, and related subjects.

#### CD135 Crop Pests and Controls

Since man started to practice agriculture, he had to „defend“ his crops against damaging organisms. Often, a large part, if not all, of a harvest is lost to harmful plants or pests, mostly caused by different types of fungi. For their multiplication and propagation, these fungi produce colossal amounts of extremely resistant spores. Exact knowledge of the way of life of these harmful plants is necessary to combat them effectively. The pictures, showing crops affected by pests, will be of interest to hobby gardeners and farmers alike. The CD deals also with a very promising aspect of global environmental protection: biologic pest control. Using well-known, easy to follow examples, the subject is explained and its goal made more accessible.

#### CD138 Biotopes und Ecosystems

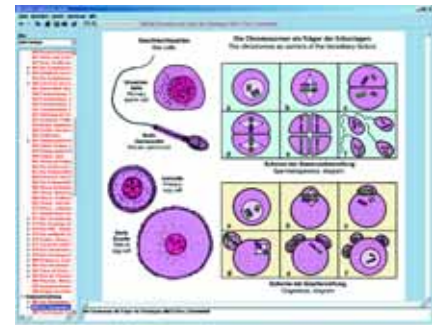
Habitats left in their natural state are becoming increasingly rare. Using selected examples, these habitats' wealth of species, the problems of preserving them and the importance for the overall ecological framework even of small biotopes are documented and discussed. This CD aims at presenting the animal and plant populations of these habitats using typical examples, dealing with their adaptations and their place in the ecosystem. Nearly all photographs were taken in situ, in order to preserve authenticity. The accompanying texts provide detailed explanations on the biology of each species and the emergence and ecology of each habitat. Animal and plant population of a fishpond and a puddle, tarn, moor, timber forest, mountain meadows, shallow coastal waters.

#### CD151 Histology of Man and Mammals

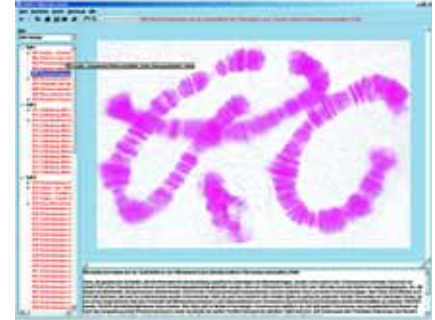
The body of every animal consists of an array of many organs, each of which must perform certain functions within the organism as a whole. The closer study of these organs calls for the preparation of very thin slices of tissue. These slices, when seen through the microscope, show that organs are made of great numbers of wildly differing cells and tissues which, thanks to special staining techniques, can be told apart by the different colors they adopt. Cells. Epithelial tissue. Support tissue. Teeth. Muscle tissue. Nerve tissue. Digestive organs. Glands. Respiratory organs. Blood and blood vessels. Lymphatic organs. Urinary and excretory organs. Sexual organs. Spermatogenesis. Oogenesis. Endocrine glands. Scalp and hair. Sense organs. Central nervous system.

**CD152 Anatomy of Phanerogams**

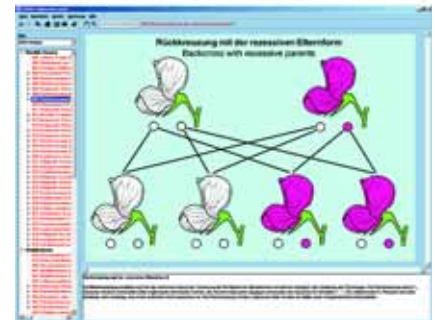
Most terrestrial plants anchor themselves to the ground using roots that also take up water and nutrients that the plant needs. The shoot above the ground, called stem, serves simultaneously to produce and support leaves and branches and to transport the assimilation products processed in the leaves to the plant's storage organs. Cells and cell organelles. Plastids. Nuclear division and cell division. Vacuole and cell wall. Spherosomes. Storage areas in the cell. Meristem, parenchyma, aerenchyma, epidermis. Trichomes and emergences. Supporting tissue. Conducting tissue. Vascular bundles and their arrangement in the stem. Secondary growth of the stem. Wood and bast secondary tissue. Vegetative apex. Leaf formation. Stomata. Leaf stalk. Leaf formation and habitat. The root. Secondary growth of the root. Symbiosis. Flowers. Meiotic nuclear division in pollen mother cells. Structure of the ovary. Development of the embryo sac. Pollen tube. Double fertilization. Embryo and endosperm. Seed and fruit.

**CD153 Anatomy of Cryptogams**

While flowering plants (Phanerogamae) show many similarities in structure and reproduction, the non-flowering plants (Cryptogamae) constitute an extraordinarily diverse group. Members of this group are bacteria, blue algae, algae, fungi, lichen, moss and ferns. Bacteria and blue algae make up the Schizophyta and exhibit the greatest and deepest differences compared to all other plants: they lack cell organelles enclosed by plasma membranes, such as cellular nuclei, mitochondria or plastids. Furthermore, their cellular wall stands out for its particular structure. Bacteria and blue algae are referred to also as prokaryotes, as against eukaryotes (living beings with real cellular nuclei), to which all other plants and also animals and humans belong. Bacteria. Blue algae (Cyanophyceae). Fire algae (Fire Algae). Euglenophyta flagellates. Green algae (Chlorophyta). Conjugatophyceae. Charophyceae. Yellow-green algae (Xanthophyta). Golden algae. Diatomea. Brown algae (Phaeophyta). Red algae (Rhodophyta). Fungi. Slime mold (Myxomycete). mildew. Ascomycetes. Basidiomycetes. Fungi imperfecti. Lichens. Moss. Liverwort. Musci. Ferns, steles, stem, root, reproduction, sporangia. Spermatophyta, reproduction.

**CD154 Human Parasites and Diseases**

Animals obtain their nourishment by manifold adaptations. One extreme method is parasitism, whereby the quest for nourishment is left to the host while the parasite, as an uninvited guest, taps its nourishment directly from its host's living body. A great number of animals live as parasites entirely or during a certain stage of their development. Even in our times, the damage caused to humans and animals by parasites is quite significant. The microscopic vectors of the sleeping sickness and malaria turn vast areas in Africa unfit for human settlement. Among us, many common afflictions caused by parasitic worms in the body diminish notoriously the capacities of those affected. Parasites are highly specialized organisms that are superbly adapted to their way of life; their study is in more than one way of particular interest. Humoral and cellular reactions. Trypanosomes and Leishmanias, multiflagellates. Entamoebae. Toxoplasmas and sarcosporidians. Limax amoebas. Malaria parasites. Babesias. Trematodes. Tapeworms. Nematodes. Tongue worms. Ticks and mites. Lice and bedbugs. Mosquitos. Fleas. Helminth eggs and larvae. Protozoan cysts. Many epidemic and infectious diseases have been by now eradicated or are easier to treat than in the past. But there are still disease factors against which nearly all weapons are ineffective. Many types of bacteria, such as pus bacteria, are becoming increasingly resistant against previously effective antibiotics. Microscopic images show the extent of the damage caused to an organ or the degree of bacterial replenishment. The processes followed by an infection and the reaction of the body thereto are many and diverse. The change shown by the organs or the individual cells provide indications regarding the situation of the disease.

**CD155 Zoology in the Classroom (New enlarged version no. 2.0)**

Morphology, the study of the structure of organisms and of the relationship among their constituent organs, together with taxonomy, the science dealing with the relationships among organisms and their classification into a hierarchical system, are closely associated. Without morphology and taxonomy, biology could not be conducted in a meaningful way. When taught separately, both are tedious subjects for nearly every student. But if the teacher puts structure, function and relationship into a meaningful context, analyzes these factors and shows how a taxonomic unit propagates throughout the available habitats, i.e. when radiation takes place, and when it finally becomes evident that a certain „blueprint“ has been „invented“, these otherwise dry subjects gain life and become interesting. This CD offers some interesting insights into some problems regarding structure and function within the context of animal taxonomy. The CD contains a wealth of color photographs, illustrations and detailed diagrams of basic body structures of the animal classes, as well as micro and macrophotographs that may be enlarged to full-screen size or printed at the touch of a button.

**CD156 Botany in the Classroom (New enlarged version no. 2.0)**

The purpose of this CD is the same as that of CD155, but focused on botany. Plant-derived foodstuffs form the basis of human nourishment. Given that modern students enjoy ever diminishing opportunities to observe or take part in sowing, cultivating, harvesting and utilization of crops, this CD attempts to fill that void. The most important crops are listed, noting their flowering periods. Pictures of plants and data on their provenance, history, cultivation and utilization provide the teacher a wealth of material for a varied and interesting botany lesson.

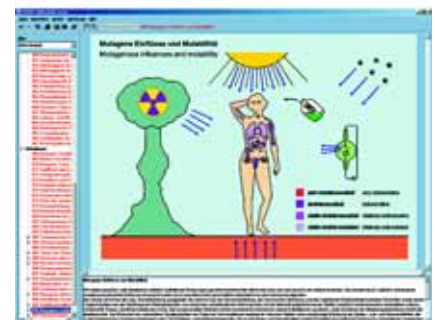
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**CD157 The World of Insects (New enlarged version no. 2.0)**

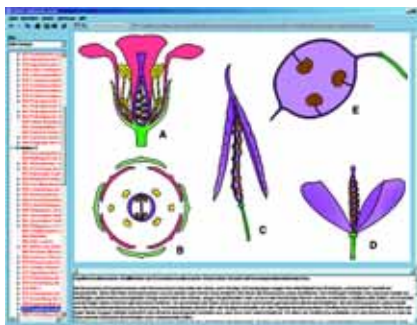
With over 1 million species, arthropods are by far the largest animal group on this planet. They include insects, spiders, millipedes and crustaceans. They share such characteristics as segmented legs and a hard external skeleton made of chitin, which encloses the entire body like an armor and serves both as protection and support. Many microscope enthusiasts started their hobby observing small insects and insect parts. That is easy to understand, considering that insects are ubiquitous and easy to catch. This CD reveals the enormous variety of insects and their fine structures using selected examples.

**CD158 The World of Butterflies**

Butterflies (Lepidoptera) constitute, after beetles, hymenopterans and dipterans, the fourth largest insect group, with over 100,000 species. The most conspicuous group is that of the butterflies, which includes the swallow-tailed, white, mottled, blue and large-headed butterfly families. The large wings are covered by iridescent chitin scales that often create bright, beautiful patterns. The mouthparts form a sucking trunk that enables the insect to draw flower nectar and other fluid nourishment. Both the occurrence and variety of existing species has decreased markedly in the past 50 years. Among the main reasons are the elimination of many plants that man considers weeds but are a source of nourishment for butterflies, together with the widespread use of insecticides in forestry and agriculture. Insecticides are supposed to target only „damaging“ insects, but butterflies are killed along as well. The technologizing and intensification of agriculture and the general burdening of the environment with poisons contribute to the disappearance of our butterfly populations. This CD shows the variety of butterflies still with us, which could be preserved through appropriate protection measures.

**CD159 Edible and Poisonous Mushrooms**

In order to understand mushrooms better, one must take into consideration that the actual plants grow hidden from view, in a saprophytic or parasitic manner and rarely in a symbiosis (as mycorrhizae) with other plants. The „mushrooms“ that we take home with us are only the fruiting bodies that the plants grow in order to preserve the



species. All these fruiting bodies, as different in appearance as they may be, are in essence a more or less clearly manifested hymenium in which spores will be formed. High-quality color pictures show selected samples in situ. In order to facilitate their recognition, all mushrooms were pictured from the side, from above and from underneath. The accompanying interpretation text provides information on their occurrence and possible use, explaining in detail the many aspects that may lead to confusion in their identification.

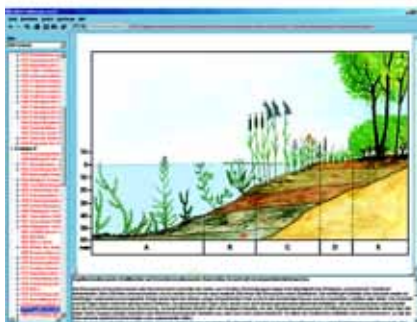
#### CD160 **Healing and Poisonous Plants**

Man found early on that certain plants contain substances that reduce pain and help sick people heal. Such healing plants were the first „medicaments“ available to man. As pharmacy, chemistry and molecular biology progressed, a wealth of other healing substances were discovered, but healing plants will still hold a firm place in future medicine, homeopathy and folk medicine. The knowledge on the effects and utilization of healing plants has been passed on for generations, and it ought not to stop now. The second part of this CD teaches how to identify plants rich in certain substances that even in very small amounts act as circulatory, nerve or metabolic poisons, i.e., poisonous plants. Poisons have always exerted a powerful fascination on man. In light of the fact that many of these substances act as powerful stimulants before exerting their damaging poisonous effects, they have been also used as magic potions. Soon it was discovered that minute quantities of these poisons had also a healing effect. The CD shows many pictures of both healing and poisonous plants systematically ordered according to their respective families.



#### CD161 **Biology of Flowers and Fruits**

One of the identifying features of higher plants is the occurrence of flowers and fruits, whose complex structure under the microscope makes for interesting observations. Some plants, such as conifers, build male and female germinal elements in different flowers. The formation of seeds and fruits is determined by the different modes of dispersal, such as by means of edible fruit flesh or of dehydration-resistant grains. Flower biology or ecology examine and describe the interactions occurring in the pollination process between flowers and their non-living and living environment. Among the external forces that make pollen dispersal possible are wind, water and transportation by animals. Of these three, pollination through animals ranks as the uppermost method, being the most effective and common of all.

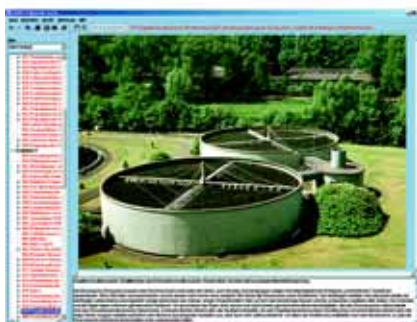


#### CD162 **Art Forms in Nature – The Realm of the Infinitesimal**

Sometimes, when looking through the microscope, veritable art forms created by Nature unfold before the eyes. When studying the regular structural organization of many living beings, such as radiolarians or diatoms, the question arises of how could Nature create such forms without a ruler and a compass. Even the symmetrical structure of an externally unimposing plant stem appears as an aesthetic pattern of cavities. This CD of photographs of the realm of the infinitesimal, selected for their aesthetic appeal, is sure to provide much viewing pleasure.

#### CD163 **Life in Water**

The fascinating underwater world first reveals its diversity when seen under the microscope. The photographs of this CD unveil the multitude of interesting living organisms that can be found in a single drop of water taken from a pond. It is like a window into a new, wonderful world: the fascinating, improbably rich realm of the smallest living beings. The astonishment caused by things invisible to the naked eye and the joy of watching these tiny creations of Nature provide the basis and stimulus for a lively schoolroom teaching experience. Simultaneously, these small creatures constitute the first link in a feeding chain which leads through small crustaceans and ever larger water animals to humans. The interaction between the tiniest organisms and fishes is sensitive even to small habitat alterations, such as changes in water temperature or in oxygen content.



#### CD164 **The Wonder of the Animal Cell (New enlarged version no. 2.0)**

The cell is the basic element of all living organisms. In unicellular organisms, a single cell performs all those vital processes for which multicellular organisms have developed specialized cells: muscle cells can contract, glandular cells secrete substances, sensory cells perceive stimuli and transform them into impulses, nerve cells conduct impulses, connective tissue cells produce an intercellular substance, red blood cells transport oxygen, white blood cells fight pathogens, sex cells insure reproduction and propagation of species. The multiplication of cells results from their division. To increase their effectiveness, cells form tissues. Different tissues work together to perform certain tasks and thereby form an organ. This CD introduces in a graphically clear manner into the variety of cells and tissues occurring in the animal and human body.

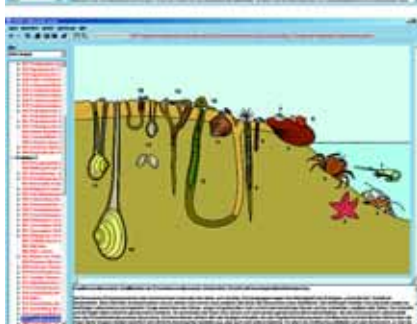


#### CD165 **The Wonder of the Plant Cell (New enlarged version no. 2.0)**

Few things in living nature are so multifaceted as the forms that plant cells can adopt. Depending on their function, they can be symmetrical and smooth-walled filling cells, repeatedly-branched trichomes, star-shaped, ring-shaped, corkscrew-shaped or reticular vessel cells, shut-off cells, storage cells with substances including crystals, woody cells, pollen cells with superficial features characteristic to each plant, etc. Even the leafless plants stand out for their multiplicity of forms: unicellular and multicellular green algae, blue algae, golden algae, fire algae, and particularly the diatoms, with their wildly varying shell forms possessing a remarkable aesthetic appeal.

#### CD140 **The Structure of Matter, Part I: Fundamentals**

„The Structure of Matter“ offers an introduction into the fundamentals of chemistry and physics, mineralogy and petrology, crystallography and crystal optics, chemistry of crystals and fundamental structures, quantum mechanics and high-energy physics. The focus of physics research is a fundamental particle hierarchy going from atoms to quarks and leptons. Even the entire cosmos has become a gigantic laboratory; once the laws governing subatomic particle behavior and interactions are understood, the origin of the universe will become that much clearer. This new CD offers students the possibility of bringing the fascination of this research field into the daily school program. A special effort was made to bring home the focal point of these studies in a visual manner. The accompanying texts furnish a wealth of reliable facts and data, the respective contents complementing each another; they have been crafted in a brief, precise language and are not „overloaded“ with terminology. Contents: Structure of the atom, elemental particles, atomic nuclei and structure of the atomic mantle. Using selected examples, the evolution from ancient ideas to current findings regarding the fine structure of matter is reviewed. Energy, matter, interactions: an attempt to visualize obscure processes taking place in the domain of elemental components of matter through their possible interactions. Classes of matter, properties of matter, chemical bond. Laws and relationships linking the physical and the chemical properties of matter. Model representations of atomic structure and chemical bonds. Crystal symmetry, properties of minerals, research into structure. Correlation between elemental particle lattice arrangement and macrosymmetry in crystallized matter. Macrophysical properties as criteria for determination of minerals. Principles of X-ray structural analysis and its methods.



#### CD141 **The Structure of Matter, Part II: Petrography and Mineralogy**

This second CD deals with the morphology and structure of solids occurring naturally, the world of minerals and stones, divided into four sections: Mineralogy of elements and bonds, mineralogy of silicates, structure of stones and characterization of gems and precious stones. The illustrations and images were selected taking care that only those depicting objects of typical and common occurrence were included. The degree of enlargement was also kept to the minimum, so that the depicted objects appear as close to their natural size as possible; enlargements beyond natural size contain a note to that effect. The accompanying texts are brief and to the point, limiting themselves to the fundamental features of the subjects under discussion. A glossary is also included with the purpose of facilitating the understanding of the extensive terminology and synonyms pertaining to this field of study.

