

# CHALLENGE TO GREATNESS



## UNITED STATES PAVILION LIBRARY/U.S.A.

Dedicated to the American spirit, the United States Pavilion at the 1964-65 New York World's Fair presents "Challenge to Greatness," an exhibition based on America's quest for equality in freedom at home and peace in the world. Here we define challenges to freedom: **Democracy, equal rights, learning, growth, social concern, creativity, and discovery.** We also define challenges to peace: **The free world, the population explosion, developing nations, arms control, our world community, and space.**

This personalized folio, prepared especially for you by the **American Library Association**, is symbolic of the continuing challenge to increase each person's free access to sources of information.

NEW YORK WORLD'S FAIR 1964-65

LIBRARY/USA  
UNITED STATES PAVILION  
NEW YORK WORLD'S FAIR 1964-65

JUNE 11, 1964

THE AMERICAN LIBRARY ASSOCIATION IS DELIGHTED THAT YOU VISITED OUR LIBRARY. IN ANSWER TO YOUR REQUEST WE PRESENT THIS ESSAY ON SCIENCE AND YOUR FUTURE. IT TOOK THE UNIVAC COMPUTER JUST FOUR SECONDS TO LOCATE THE TEXT AND PRINT IT FOR YOU. THE AMERICAN LIBRARY ASSOCIATION INVITES YOU TO VISIT YOUR LOCAL LIBRARY FOR ADDITIONAL INFORMATION ON THIS SUBJECT.

MUCH INTEREST HAS BEEN SHOWN IN THE REPORTED ANALYSES OF SEA WATER FOR GOLD, SILVER, AND URANIUM. FOR INSTANCE, IN THE WATER OF THE OCEANS THE TOTAL AMOUNT OF GOLD HAS BEEN ESTIMATED AT ABOUT 10,000,000,000 TONS. A PROBABLE FUTURE OCEAN UTILIZATION IS THAT OF DISTILLING FRESH WATER FROM SEA WATER, SINCE THE USE OF WATER IS GROWING FAST. ALREADY FRESH WATER IS OBTAINED TO SOME DEGREE IN THIS WAY, AND AS ATOMIC RESEARCH PROGRESSES, REACTORS WILL BE MADE TO DISTILL SEA WATER FOR MORE GENERAL USE.

THE DEVELOPMENT OF CIVILIZATION HAS BEEN ACCOMPANIED BY A CONSTANTLY ACCELERATED INCREASE IN USE OF ENERGY. THE ENERGY CONTINUOUSLY RADIATED BY THE SUN AND THE INTERIOR HEAT OF THE EARTH ARE POTENTIAL SOURCES OF ENERGY DIFFICULT TO EVALUATE AT THE PRESENT. NUCLEAR ENERGY FROM THE FUSION OF DEUTERIUM (HEAVY HYDROGEN) AND THE FISSION OF URANIUM AND THORIUM ARE THE REMAINING SOURCES. BOTH THE ROCKS AND THE SEAS HAVE ENERGY CONTENT SUFFICIENT TO LAST MANKIND FOR 10,000,000,000 YEARS, WHICH IS ABOUT AS LONG, AND, ACCORDING TO SOME, TWICE AS LONG, AS THE SOLAR SYSTEM IS EXPECTED TO LAST.

AT LEAST TWO BENEFICIAL USES OF GAMMA RADIATION HAVE ALREADY BEEN FOUND--STERILIZATION OF FOODS AND STRENGTHENING OF PLASTICS. SOME PROCESS HEAT APPLICATIONS FOR WHICH NUCLEAR REACTORS ARE POTENTIALLY SUITABLE ARE FORMING FERTILIZER OUT OF ATMOSPHERIC NITROGEN, FORMING PETROLEUM PRODUCTS AND FUEL OUT OF COAL, DISTILLATION OF SEA WATER AND HEATING OF BUILDINGS. THE CHIEF ADVANTAGE OF A REACTOR FOR VEHICLE

LIBRARY

PROPULSION IS EXTENDED RANGE. BY THE EARLY 1960'S THERE WERE AFLOAT MANY NUCLEAR SHIPS, AND NUCLEAR POWER WAS PROPOSED FOR AIRCRAFT, ROCKETS, TRACTORS AND RAILROAD LOCOMOTIVES. ALSO FIVE NATIONS HAVE DEMONSTRATED A CAPABILITY TO PRODUCE ELECTRIC POWER FROM ATOMIC ENERGY. THE AEC HAS PREDICTED THAT IN THE U.S. COMPETITIVE COSTS WOULD BE ACHIEVED FOR ATOMIC POWER BY 1966 IN AREAS WHERE HEAT FROM CONVENTIONAL FUELS COSTS 35 CENTS PER 1,000,000 B.T.U.

MANY DEVICES AFFECTING LIFE IN THE FUTURE HAVE BEEN DEVELOPED. MODEL ULTRASONIC WASHERS AND DOMESTIC ELECTRONIC OVENS APPEARED BY THE 1950'S. AS EARLY AS 1960 THERMOPLASTIC MATERIALS BEGAN TO COMPETE AS TRUE ENGINEERING MATERIALS, EVEN TAKING OVER METAL MARKETS. ELECTRONIC EQUIPMENT IS BECOMING FASTER AND MORE VERSATILE THROUGH SUCH DEVICES AS TRANSISTORS, DIODES, MEMORY DEVICES, MAGNETIC AND 'PARAMETRIC' AMPLIFIERS.

LIKE A MODERN FACTORY, THE FUTURE FARM MAY HAVE TELEVISION FOR OBSERVATION, BELT CONVEYORS FOR MOVING SEEDS AND CROPS, RADIO BEAMS FOR AUTOMATIC PLANTING, NEW POWER SOURCES AND CHEMICALS, AND CONTROLLED SOIL MOISTURE AND TEMPERATURES. ELECTRONIC HIGHWAYS MAY ACCELERATE AND BRAKE AND MAINTAIN PROPER SPACING FOR ALL 'AUTOMATIC' CARS ON THE ROAD. CITIES OF THE FUTURE MAY HAVE ROADWAYS ACROSS BUILDING TOPS. ROCKET LINERS MAY BE USED FOR ULTRA-RAPID PASSENGER TRANSPORTATION OVER LONG DISTANCES.

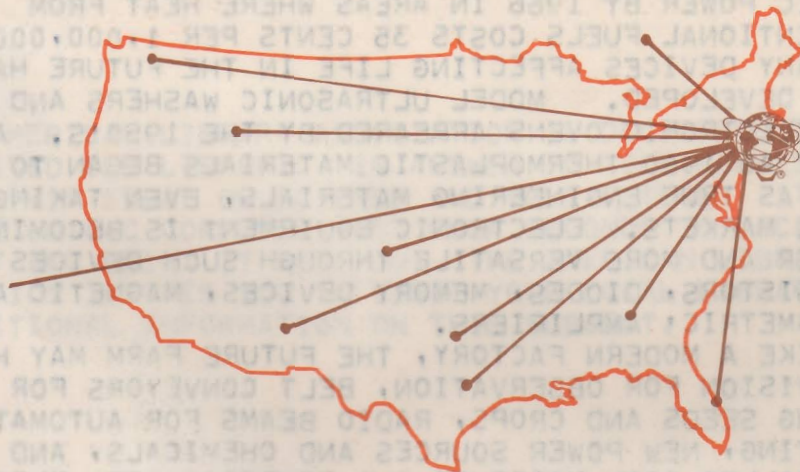
THE OPTICAL MASER (OR LASER), A DEVICE THAT PRODUCES A LIGHT BEAM OF GREAT INTENSITY FOR SPECTACULAR POWER CONCENTRATIONS, REPRESENTS A SIGNIFICANT NEW APPLICATION OF TECHNOLOGY. SPECULATION HAS BEEN MADE ON THESE POSSIBILITIES OF MASER USE: FOR COMMUNICATION BETWEEN SOLAR SYSTEMS A FEW LIGHT-YEARS APART, IN SURGERY, FOR ACHIEVING THERMONUCLEAR TEMPERATURES OVER A SMALL REGION OF SPACE AND THEREBY KINDLING A FUSION MACHINE, AND FOR CONTROLLING CHEMICAL REACTIONS.

IT HAS BEEN PREDICTED THAT BY THE YEAR 2000 CANCER AND LEUKEMIA WILL HAVE BEEN RELEGATED TO MEDICAL HISTORY, THE COMMON COLD WILL HAVE BEEN FORGOTTEN, DIABETES WILL NO LONGER BE A PROBLEM, AND ONE INJECTION OR PILL WILL IMMUNIZE CHILDREN AGAINST ALL COMMUNICABLE DISEASES.

THIS ESSAY WAS ADAPTED FROM ENCYCLOPAEDIA BRITANNICA AND BRITANNICA JUNIOR ENCYCLOPAEDIA BY THEIR EDITORS, IN COOPERATION WITH THE AMERICAN LIBRARY ASSOCIATION.

# LIBRARY/U.S.A.

## INFORMATION CENTER FOR THE UNITED STATES PAVILION NEW YORK WORLD'S FAIR



An important library information service of the future is being demonstrated here today. Data stored in this 490 Real-Time Computer may be requested from, transmitted to and printed at any location in the country—or throughout the world—where data transmission facilities are available.

**OPERATION:** American Library Association  
in cooperation with  
Special Libraries Association and  
American Documentation Institute

**COMPUTER:** Installed and maintained by

**UNIVAC**  
DIVISION OF SPERRY RAND CORPORATION

**INFORMATION:** Researched and compiled by:  
Essays—Encyclopaedia Britannica Inc.  
Reading Lists—A.L.A. Adult Services Division

Forms by ALLIED/EGRY Business Systems