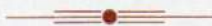


SUN - DIALS

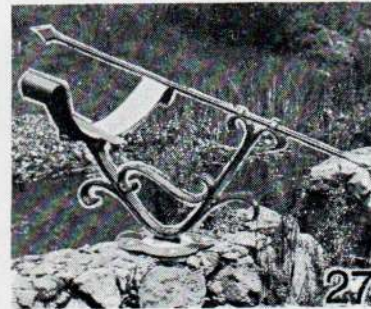
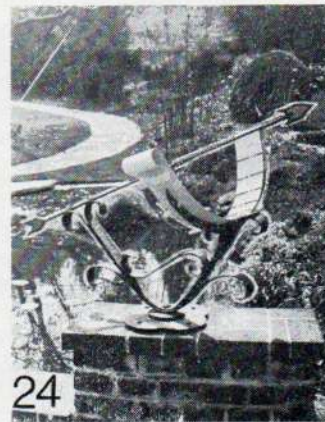
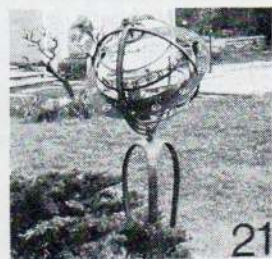
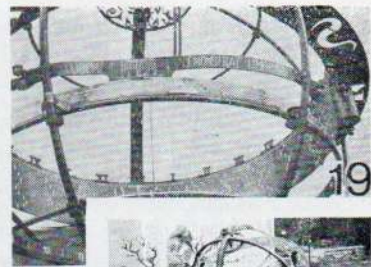
ART OBJECTS OF TIMEKEEPING



IDH 553-20-35



CRONOMETRIA LOSKE



HOROLOGIUM SOLARIUM "GNOMONIC"

circum flecto aequatorialis

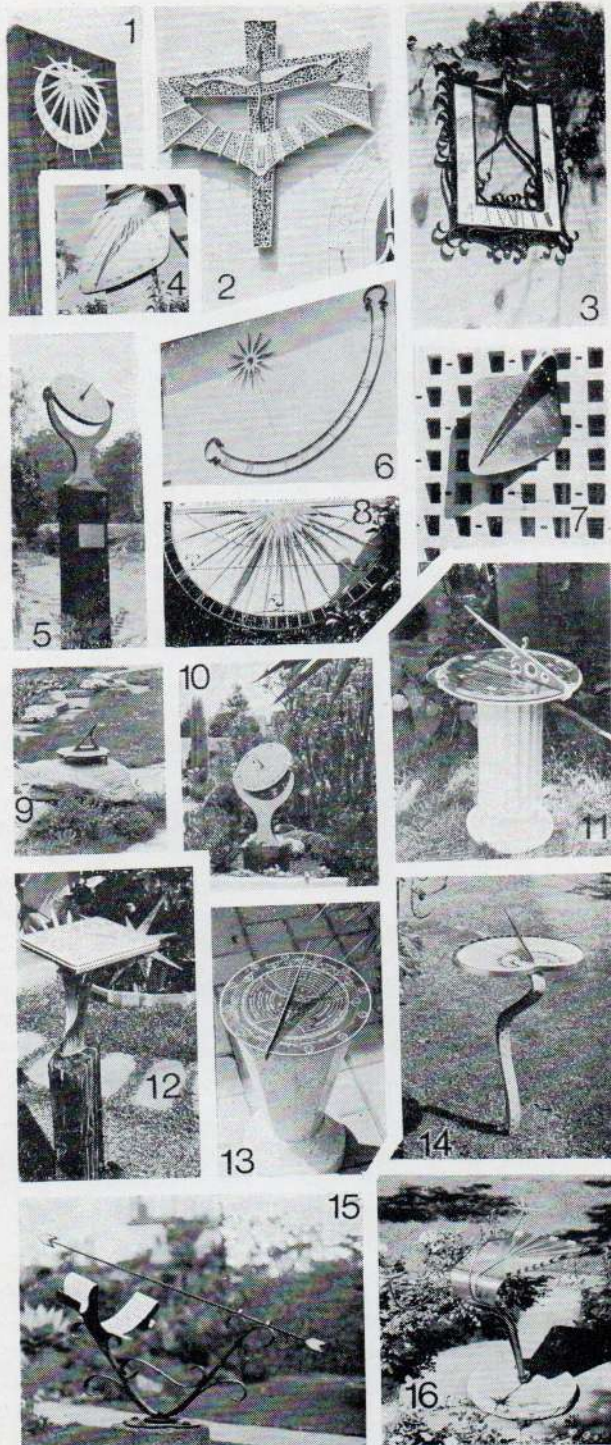


Sun dial with double dial-plate on a disk for the northern hemisphere. For a correct adjustment it is necessary that the mark S on the discs points out exactly towards geographic south; for this purpose the compass built in the base can be used. The inclination of the two shadow-casters C and D must correspond in each case to the (geographic) latitude of the place where the sun dial is installed. The angle by which accordingly the dial-plate A and B must be inclined from the vertical position, can be read off on the small disk E which has a graduation. If the sun dial for instance is installed on 30° latitude, the plane of the dial must correspond to the inclination resulting when they pass the division 30 on the disk E. Therefore the axis of the two shadow-casters is parallel to the earth axis and the dial to the equatorial plane. The position of the dial thus obtained also corresponds to the sun's carrier during the so called equinoxes (aequinoctialis) of March 21 (beginning of spring-time) and September 23 (beginning of autumn). From these dates on the projection of the shadow-casters changes: starting from springtime's beginning, during summer and until autumn's beginning, dial A with the Roman ciphers is used for time measurement, and starting from autumn's beginning, throughout winter and until springtime's beginning, dial B with the Arabian ciphers. Dial A with the Roman ciphers always must show upwards, because otherwise the shadow of the pointer follows up the numerals backwards.

The measure of time of the sun dials and the two differences with normal time.

The indications of the determined time correspond to the "true solar time" of the locality of installation of the sun dial. The casting of shadow upon 12 corresponds to the "true" noon, that is to the daily highest position (culmination) of the sun.

The divergencies of this "true sun time" from normal time of all usual mechanical clocks are: first, the values of the time equation (aequatio temporis) for the "mean solar time" (according to the tables V and W on both sides of the base), an second, the values of the differences of degrees of longitude between the locality of installation of the sun dial and the meridian of longitude coordinated to the official normal time.



ART OBJECTS FOR HOUSE
AND GARDEN BY
ING. LOTHAR M. LOSKE

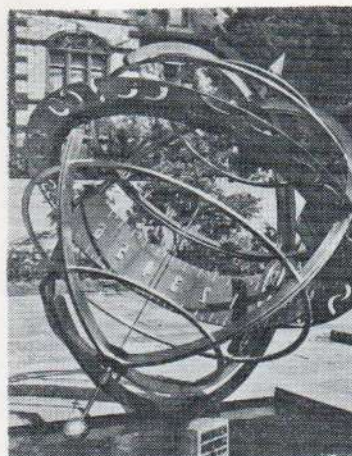


This so-called equatorial sun dial model "Belhora" is not only an especially attractive ornament for the garden, but is also at the same time interesting, instructive and a perfectly constructed astronomical instrument.

Each sun dial is an individual handicraft based upon calculations and design by Ing. Lothar M. Loske constructor of many famous monumental sun dials and astronomical instruments.



"Belhora" desarmed especial box for airfreight



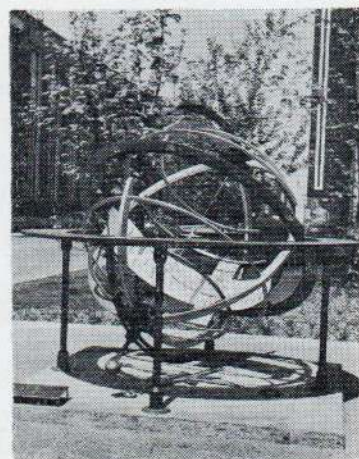
1957
City of
Switzerland

ASTRONOMICAL SUN DIALS

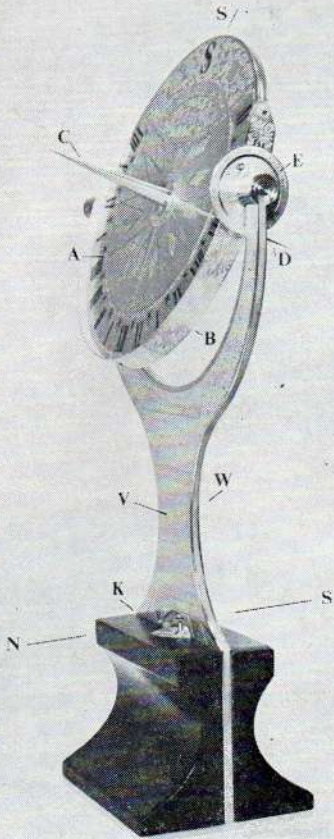


City of Frankfurt/M. Germany the world
greatest equatorial sun dial

designed and
constructed
by Lothar M. Loske



City of Basel
Switzerland
1956



"GNOMONIC"
bronze cauterized 12 1/2 in. high



The first difference

The table V and W called "aequatio temporis" only indicates the values for the 1. and 15. day of each month. The other values are situated in between according to the signature + or -.

If for instance the time equation indicates for some day minus 16' (16 minutes), this means that a correctly working mechanical clock in the same moment when the shadow of the pointer covers the number 12 of the dial disc, must indicate no more than 11 o'clock 44 minutes. On the contrary, the value of the time equation being plus 5 minutes, a correctly working mechanical clock must indicate already 12 o'clock and 5 minutes.

The second difference

In accordance with the world regimen of normal time, entire countries conform with the respective local time ("mean solar time") of a certain degree of longitude.

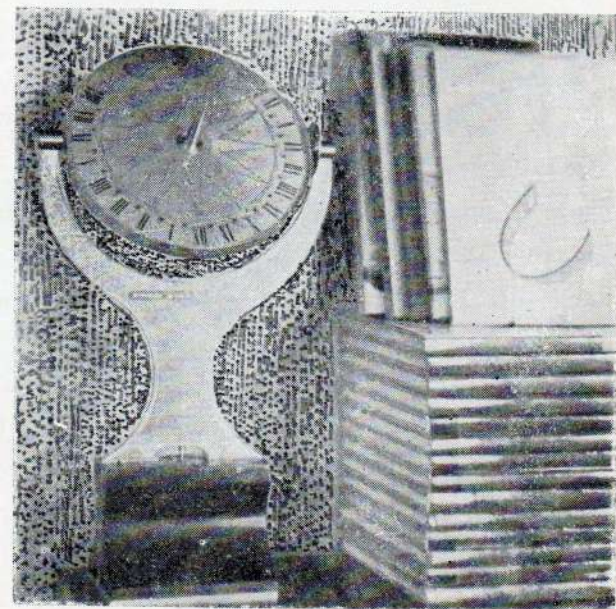
Examples: USA with 60°, 75°, 90°, 105° and 120° West.

México with 90° West

Europe with 15° West, 0° (world time) and 15° East.

Therefore all places which are not located on such a degree of longitude are obliged to adjust their clocks in accordance with the time of the legally determined meridian of normal time. When doing so, a difference of 1 longitudinal degree corresponds in each case to 4 minutes of time.

Example: If the sun dial is installed on a spot of the meridian 94 where 90° longitude are valid as meridian of normal time, the sun dial will always be late by the difference between both of 16 minutes (4x4 min.). Should the sun dial be located on 87° longitude, it will all the time be advanced by (3 x 4 min.) 12 minutes. This is due to the sun on 87° longitude arriving at its culmination already 12 minutes earlier ("true noon") than at the location of the zone time meridian, in this instance at 90° West longitude.



THE SUN DIALS

The fact that sun dials, being a venerable spiritual possession of long gone times, nowadays still are popular, is an evidence of the pleasant image they evoke about magnitude and beauty of the astronomical sciences. The theory of the sun dials —the GNOMONY— is considered the oldest science of chronometry and its base has always been thorough observation. Also GNOMONY always took part in all speculations of the astronomical sciences.

It is utmost interesting what sun dials can offer us, what knowledges they contain and how much we can learn about astronomy from them. Furthermore, it is a curious fact that the sun dial in principle can not be surpassed in one point by any modern technical clock, even by a chronometer, an electronic or even an atomic clock. All kind of appliances comprised under the name of clock can keep with more or less precision, according to their system, the time on which they are adjusted. But all these clocks are unable to measure or determine, respectively, the time by themselves. But the sun dial can do so.. When it seems to be "stopped" because the sun does not shine, nevertheless it continues "going" and determines once and again where we are regarding time and events in the universe. The sun dial, therefore, is an instrument for determination of time. Which also explains the fact that sun dials still have been used until end of the 19th. century, notwithstanding that mechanical clocks exist since at least 900 years. The deficiency of the mechanical clocks was that they did not keep the hours and minutes exactly enough over a large span. Once and again it was necessary to readjust them, and according to what? — according to sun dials and their indication of the sun's culmination, that is its highest position over the spot where the sun dials is installed, which also corresponds to the so-called astronomic noon.

"Astronomic noon" corresponds to the moment of the shortest shadow of the day and the point where it turns from West to East. Unfortunately the time measure from one astronomic noon to the next in the course of the year has not the same duration. This time measure is designated "true solar time".

It declines strongly from the usual normal time of the mechanical clocks.

Therefore sun dials often are suspected to work entirely wrong. But sun dials dont work wrong, they only indicated another time measure, different from that the observer has on his wrist watch.

Besides from this "true solar time" of the sun dials there are still the following time measures: the "mean solar time", the "normal time", the "world time" and the "sidereal time". But the declinations which exist between "true solar time" and "mean solar time" and also "normal time", can be marked on the dial-plate of a sun dial, even the divisions of a calendar. Of course it is not so easy to read off the normal time and in case also the date from a sun dial as from the dial-plate of a mechanical clock, but it is much more interesting and instructive.

The orientation of sun dials

The worth of a sun dial depends from its correct position regarding an imaginary earth axis and the horizontal plane of its standpoint, and also all other calculations of the dial-plates are made on this base. The especial denominations such as: "horizontal sun dial", "vertical sun dial", "ecuatorial sun dial" or "polar sun dial" also result from the position of the plane of the dial-plate of the sun dial regarding the earth's surface.

The systems differ from one another according if the extended plane of the dial-plate is parallel to the horizon, the zenith, one of the poles or the equator. And all sun dials —provided they have been built after the 15th. century— have in common that all their shadow-casters are parallel among themselves and also to the imaginary earth's axis.

The parallel position to the earth's axis which is necessary for each shadow-caster, results if one erects same from the horizontal position for the angle of the latitude of the standpoint of a sun dial and turns it to North.

As mentioned before, besides the hours lines for the "true solar time" can be drawn in still further indications on the dial-plate. One can mark the difference of the time equation ("aequatio temporis", which conducts to the direct indications of the so-called "mean solar time", and one may indicate also the difference of the zone time. This difference is always constant and results from the difference between the degree of longitude of the standpoint of the sun dial and the degree of longitude of the respective country which determines the legal normal time. Even calendar divisions with zodiac and its angles, as well as indications of duration of days can be marked. The previous condition for such manifold indications is, naturally, that the size of the dial-plate is sufficient, as in the case of that equatorial sun dial at Frankfurt/M., Germany with a diameter of 3,50 mts., in Basle Switzerland with 2,50 mts. or that equatorial sun dial in Zurich, Switzerland with a diameter of 1,80 mts.

The lateral illustrations permit to notice that the sun dial, a venerable sipirtual property of far away times, is capable to occupy still nowadays a place as a jewel of modern art of the 20th. century.

SUN DIALS

RELOJES DE SOL



SONNENUHREN

HORLOGE SOLAIRES

ART OBJECTS OF TIMEKEEPING

Highly sophisticated instructive art-works for the understanding of time measuring and of the events in the universe.

OBRAS DE ARTE DE MEDICION DEL TIEMPO

Obras de arte instructivas de un alto nivel para la comprensión de la medición del tiempo y de los acontecimientos en el universo.

KUNSTWERKE DER ZEITMESSUNG

Dekorative Kunstwerke mit hohem Bildungsgrad zum Verständnis der Zeitmessung und den Geschehnissen im Weltall.

ŒUVRES D'ART DE LA MESURE DU TEMPS

Œuvres d'art instructives hautement sophistiquées pour la compréhension de la mesure du temps et des événements dans l'univers.

DESIGNED BY

DISEÑADO POR

ENTWORFEN VON

DÉSSINÉ PAR

PROF. ING. LOTHAR M. LOSKE

MEXICO

APDO. POSTAL 19-611 03901 MEXICO, D.F.



HOROLOGIUM SOLARIUM

(aequatorialis aequinoctialis) FRANCFORDJA ad MOENUM 1951

EQUATORIAL SUN DIAL

of the city of Frankfurt a.M., Germany. The most complete and variable sun-dial in the world, designed and built in 1951 by Lothar M. Loske.

THE DESIGN IN AN ANULAR SPHERE, similar to an ancient astronomical device used to determine the stars' position, **GIVES TO THE SUN-DIAL** a beautiful aspect and turns it into **A HANDSOME OPENAIR SCIENTIFIC MONUMENT**.

Sphere's diameter 3.60 m, material employed 1000 kg copper, handmade.

The indication of time units is obtained through the cable's shadow, from pole to pole, inside the sphere.

THE DESIGN IN AN ANULAR SPHERE, similar to an ancient astronomical device used to determine the stars' position, **GIVES TO THE SUN-DIAL** a beautiful aspect and turns it into **A HANDSOME OPENAIR SCIENTIFIC MONUMENT**.

AEQUATORIAL - SONNENUHR

der Stadt Frankfurt a.M. BRD.

Die vollständigste und vielseitigste Sonnenuhr der Welt. Entworfen und konstruiert 1951 von Lothar M. Loske Ringkugel-Durchmesser 3,60 m, Material 1000 kg Kupfer, ausgeführt in Handarbeit, Anzeigesystem durch den Schatten des Seiles inmitten der Ringkugel von Pol zu Pol.

DIE GESTALTUNG INNERHALB EINER RING - KUGEL - ähnlich einem antiken astronomischen Instrument zur Ermittlung der Sternpositionen **-VERLEIHT DIESER SONNENUHR** einen reizvollen Aspekt und verkörpert **EIN ATTRAKTIVES MONUMENT DER WISSENSCHAFT IN FREIER NATUR**.

RELOJ SOLAR ECUATORIAL

de la Ciudad de Frankfurt a.M., Alemania.

El Reloj Solar más completo y variado del mundo, diseñado y construido en 1951 por Lothar M. Loske. Diámetro de la esfera 3,6 m, material 1000 kg de cobre, ejecutado a mano, indicación de unidades de tiempo por medio de la sombra del cable dentro de la esfera de polo a polo.

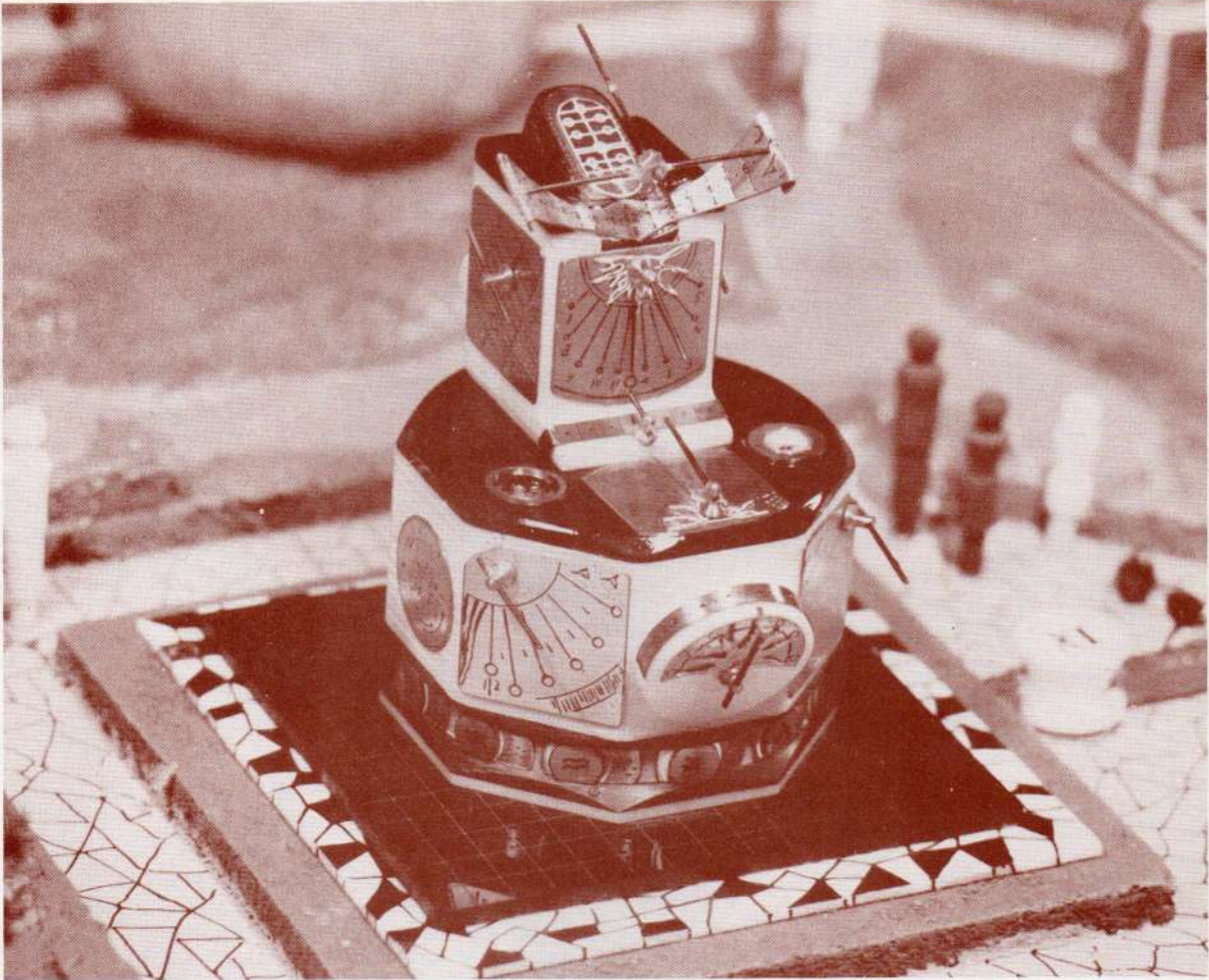
LA DISPOSICION EN UNA ESFERA ANULAR, semejante a un antiguo instrumento astronómico, utilizado para determinar la posición de estrellas, **PROPORCIONA AL RELOJ** un hermoso aspecto y lo convierte **EN UN BELLO MONUMENTO CIENTIFICO AL AIRE LIBRE**.

HORLOGE SOLAIRE EQUATORIAL

de la ville de Frankfurt a.M., en Allemagne.

L'horloge solaire la plus complète et plurielle du monde, construite en 1951 par Lothar M. Loske. Diamètre de la sphere 3.60 m, matériel 1000 kg de cuivre, faite main, indication des unités de temps au moyen de l'ombre portée par un fil métallique traversant la sphere d'un pole a l'autre.

LE FAIT QU'ELLE SOIT PLACEE AU CENTRE D'UN SPHERE ANNULAIRE, la rendant ainsi semblable à un antique instrument astronomique destiné à déterminer la position des étoiles, **DONNE A CETTE HORLOGE** une beauté spéciale, et en fait **UN MERVEILLEUX MONUMENT SCIENTIFIQUE A L'AIR LIBRE**.



HOROLOGIUM SOLAI

GNOMONICUM — a sun-dial model of various planes designed for public parks.

Average size 2,5 m diameter, total height about 3.8 m. Block made of cement, stone or marble, dialplates made of brass, copper and chromium steel, all cast, cut and engraved by hand.

18 different astronomical and technical timing indications, "world time" and "local time" indications for all the cities and countries in the world, calendar indicators, equations of time and planetary values, all recognizable through the shadow projections of the sunrays.

The execution of the project is at your disposal and information is available whenever required.

For the **CRONOMETRARIUM** as well as the **GNOMONICUM** —including the names— all rights are reserved, the patent numbers have been requested, the originality of the author Lothar M. Loske's inventions is confirmed by his

GNOMONICUM — modelo de un Reloj Solar Monumental, multifacético para un parque público.

Base de aprox. 2,5 m de diámetro

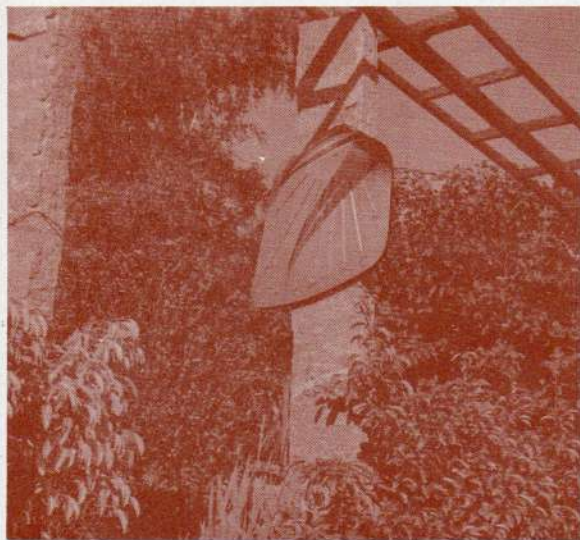
Altura aprox. 3,8 m

Bloque de cemento, piedra o mármol, carátulas de latón, cobre y acero cromado, forjadas, caladas a mano.

18 indicaciones astronómicas y de medición del tiempo diferentes — la Hora Universal y la Hora Local de todas las ciudades del mundo, Calendario Solar, Ecuaciones del Tiempo y Nociones de Planetas; reconocibles en su totalidad por la proyección de la sombra de los rayos solares.

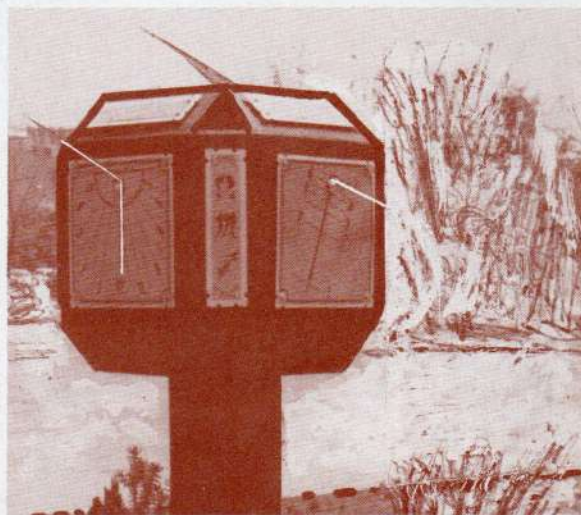
La elaboración del proyecto en forma monumental —cualquier tamaño— está a disposición —mayores informaciones a petición—.

first publication in the journal "Universo", vol 40, April 1983 of the Astronomic Society in Mexico, and the journal "Impacto", nr. 1841, June 1985 in Mexico.



Los Relojes Solares de Lothar M. Loske son por un lado inigualables muestras de construcción de instrumentos y por el otro notables esculturas modernas en metal.

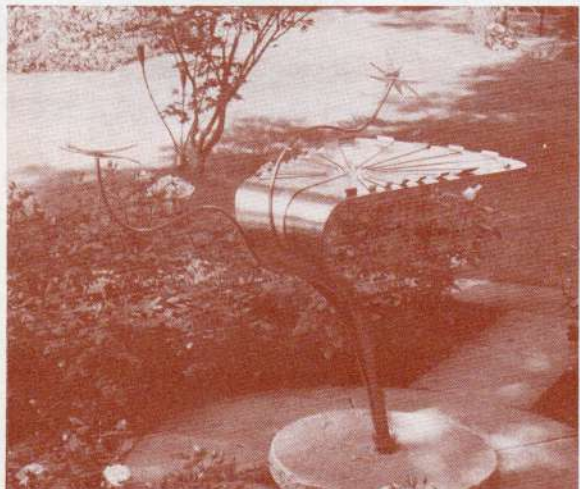
Son obras de arte e instrumentos de medición de tiempo basados en métodos antiguos, que gracias a posibilidades ingeniosamente ideadas, permiten la lectura de sistemas de medición moderna del tiempo, así como nociones astronómicas, desconocidas hasta el siglo actual.



Loske's sun-dials are in one way, ingenious rarities in the manufacturing of instruments and in the other, exceptional masterpieces of modern metal sculpture. They are time measuring instruments based upon methods from the past and outstanding designs in one, headpieces, which, moreover offer the skillfully invented possibilities to recognize the modern systems of chronometry and astronomic information, totally unknown before this century.

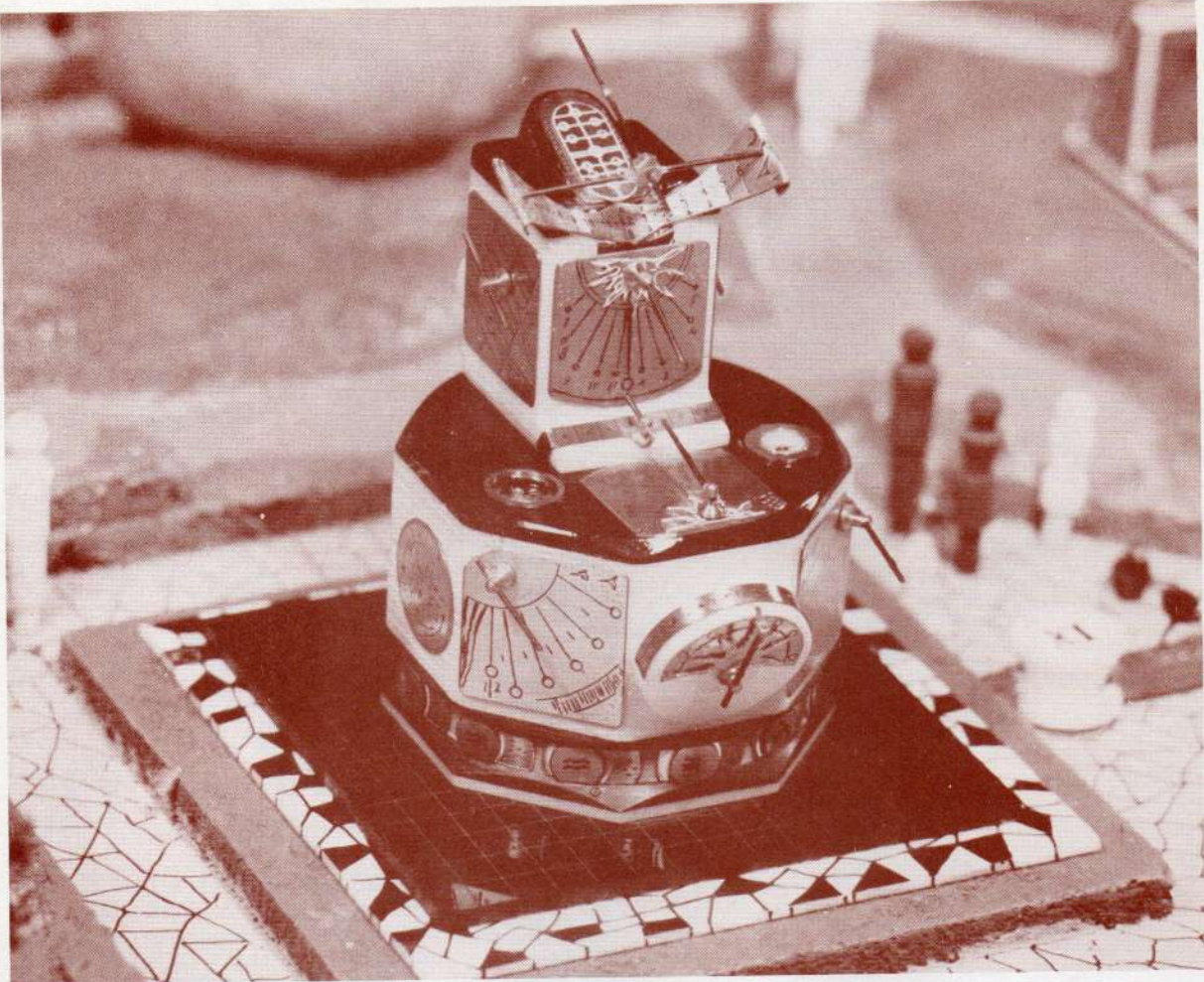
Les cadrans solaires de Lothar M. Loske sont, d'une part, des échantillons exceptionales de la fabrication d'instruments, et d'autre part, d'excellentes sculptures modernes en métal.

Ce sont des instruments chronométriques basés sur des méthodes du passé ainsi que des dessins ingénieux qui permettent de visualiser les systèmes modernes de la chronométrie et de l'information astronomique tout à fait méconnus avant notre siècle.



Die Sonnenuhren von Lothar M. Loske sind einerseits ausgesprochene Raritäten des Instrumentenbaues und andererseits beachtenswerte Kunstwerke der modernen Metallplastik.

Es sind Kunstwerke und Zeitmessinstrumente einer antiken Methode, jedoch mit genial erdachten Möglichkeiten auch jene Systeme moderner Zeitmessung und astronomischer Erkenntnisse ablesen zu können, die in der Zeit vor dem jetzigen Jahrhundert noch unbekannt waren.



HOROLOGIUM SOLAI

GNOMONICUM — a sun-dial model of various planes designed for public parks.

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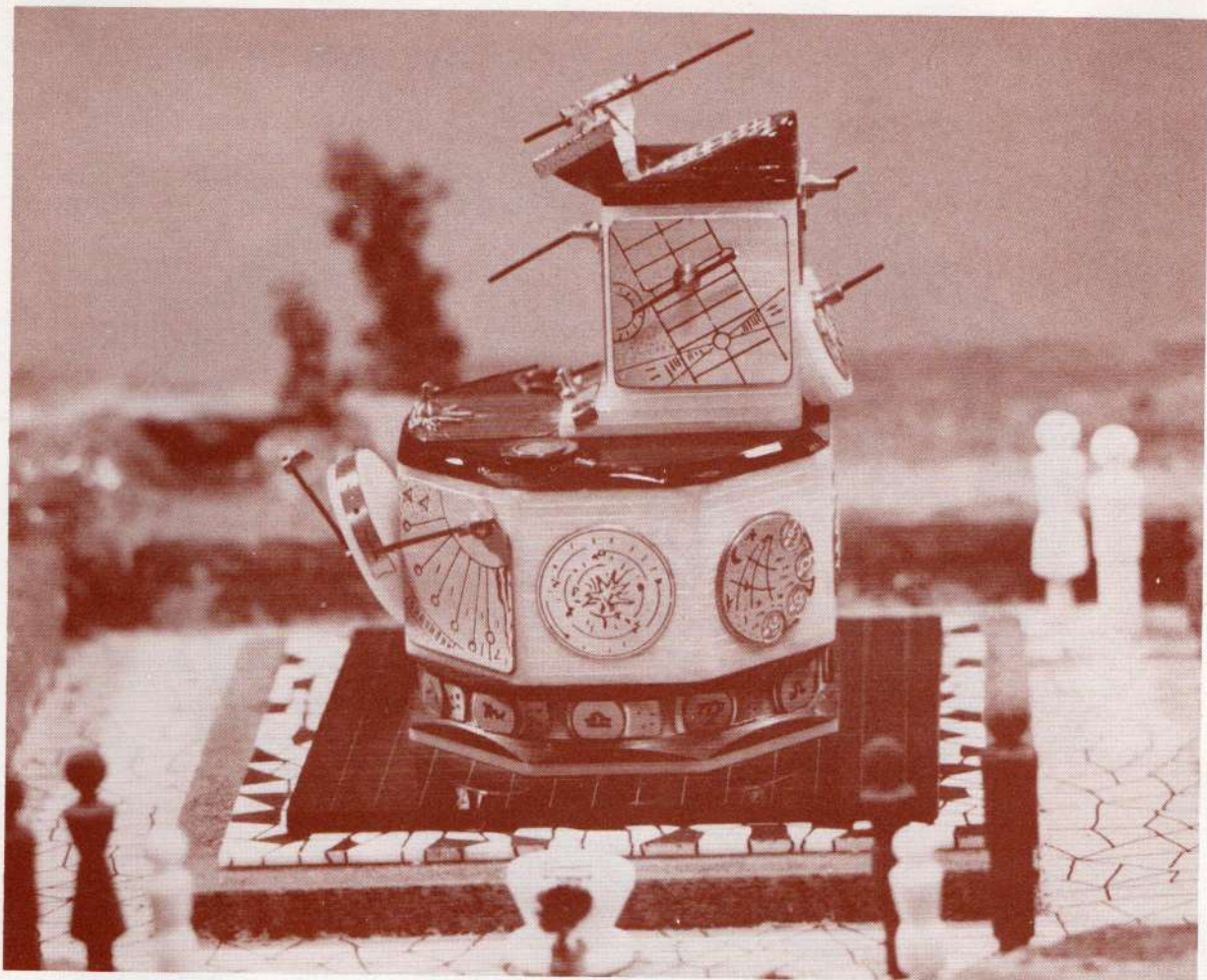
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Base de aprox. 2,5 m de diámetro
Altura aprox. 3,8 m

Bloque de cemento, piedra o mármol, carátulas de latón, cobre y acero cromado, forjadas a mano. 18 indicaciones astronómicas y de medición del tiempo diferentes — la Hora Universal y la Hora Local de todas las ciudades del mundo, Calendario Solar, Ecuaciones del Tiempo y Nociones de Planetas; reconocibles en su totalidad por la proyección de la sombra de los rayos solares.

La elaboración del proyecto en forma monumental —cualquier tamaño— está a disposición —mayores informaciones a petición—.

first publication in the journal "Universo", vol 40, April 1983 of the Astronomic Society in Mexico, and the journal "Impacto", nr. 1841, June 1985 in Mexico.



RIUM MULTIFACTIUS

GNOMONICUM — Modell zu einer monumentalen Vielflächen — Sonnenuhr für eine öffentliche Parkanlage

Grundriss ca. 2,5 m Durchmesser

Totalhöhe ca. 3,8 m

Block aus Zement, Stein oder Marmor, Zifferblätter aus Messing, Kupfer und Chromstahl, von Hand geschmiedet, ausgesägt und graviert.

18 verschiedene astronomische und zeitmesstechnische Indikationen — Weltzeit und Zonenzeiten sämtlicher Städte und Länder auf der Erde, Kalenderangaben, Zeitgleichung und Planetenwerte — sämtlich erkennbar durch Schattenprojektion der Sonnenstrahlen.

Die Ausführung des Projektes in monumentaler Grösse steht zur Verfügung — weitere Auskünfte auf Erfragen.

Tanto para el **CRONOMETRARIUM** como para el **GNOMONICUM** —incluyendo estos nombres— todos los derechos están reservados, las patentes están en trámite y la originalidad de los inventos del autor Lothar M. Loske confirma-

GNOMONICUM — modele d'un cadran solaire à plusieurs faces, pour un parc public.

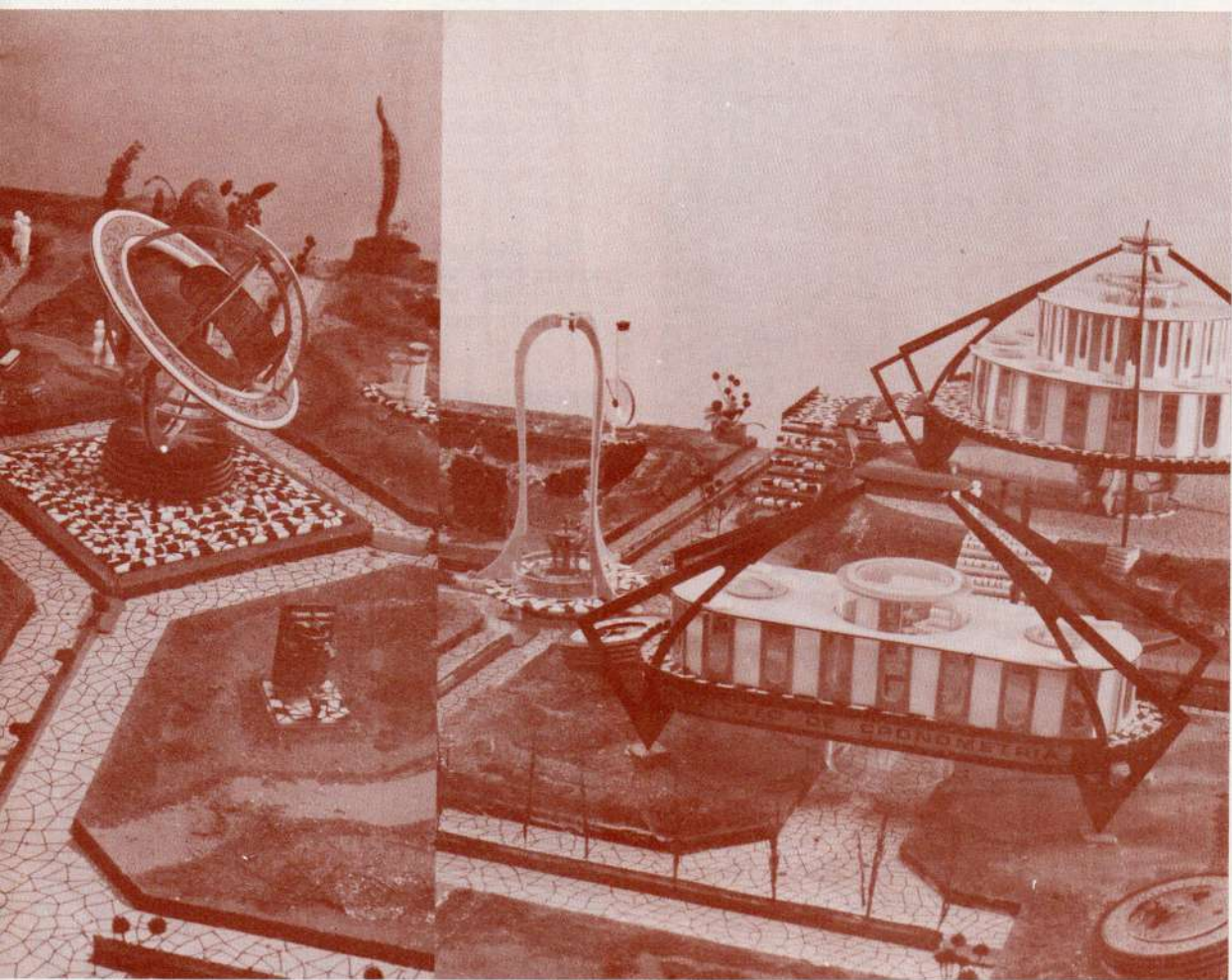
Mesures approximatives 2.5 m de diamètre et 3.8 m de hauteur. Bloc de ciment, de pierre ou de marbre et cadran en laiton, en cuivre et en acier chromé forgé, ajouré et gravé à la main.

18 différents indications astronomiques et de mesure du temps "heure universelle" et "heure locale" de toutes les villes et pays du monde, équations de temps et divers renseignements au sujet des planetes, indications de calendrier, tout ceci facilement reconnaissable par des jeux d'ombre et de soleil sur les cadrans.

La réalisation du projet en grand format est disponible — quelle que soit sa dimension —.

Toute information à ce sujet est à votre disposition.

da por su primera publicación en la revista "Universo", vol 40, abril de 1983 de la Sociedad Astronómica en México y en la revista "Impacto" no. 1841, junio de 1985 en México.



LOTHAR M. LOSKE (descriptio structurae)

CRONOMETRARIUM — Modell im Masstab von 1 : 30 zu einer Parkanlage mit Ausstellungsgebäude und Institut für Zeitmessung.

Repräsentation von ca. 1000 Objekten und Systemen der Zeitmessung wie: Obelisken, Sonnenuhren, kuriose Zeitmesser aller Epochen, Anzeigemethoden, Prinzipien der Mechanik, Elektromechanik, Elektronik, Thermodynamik, Optik, Kalendermechanismen, elektromechanisches Planetarium, monumentales Torsionspendel und Pendel "Foucault", Lehrmittel der Kinematik, Chronometrie, Astronomie und Technik des Präzisions-Instrumentenbaues.

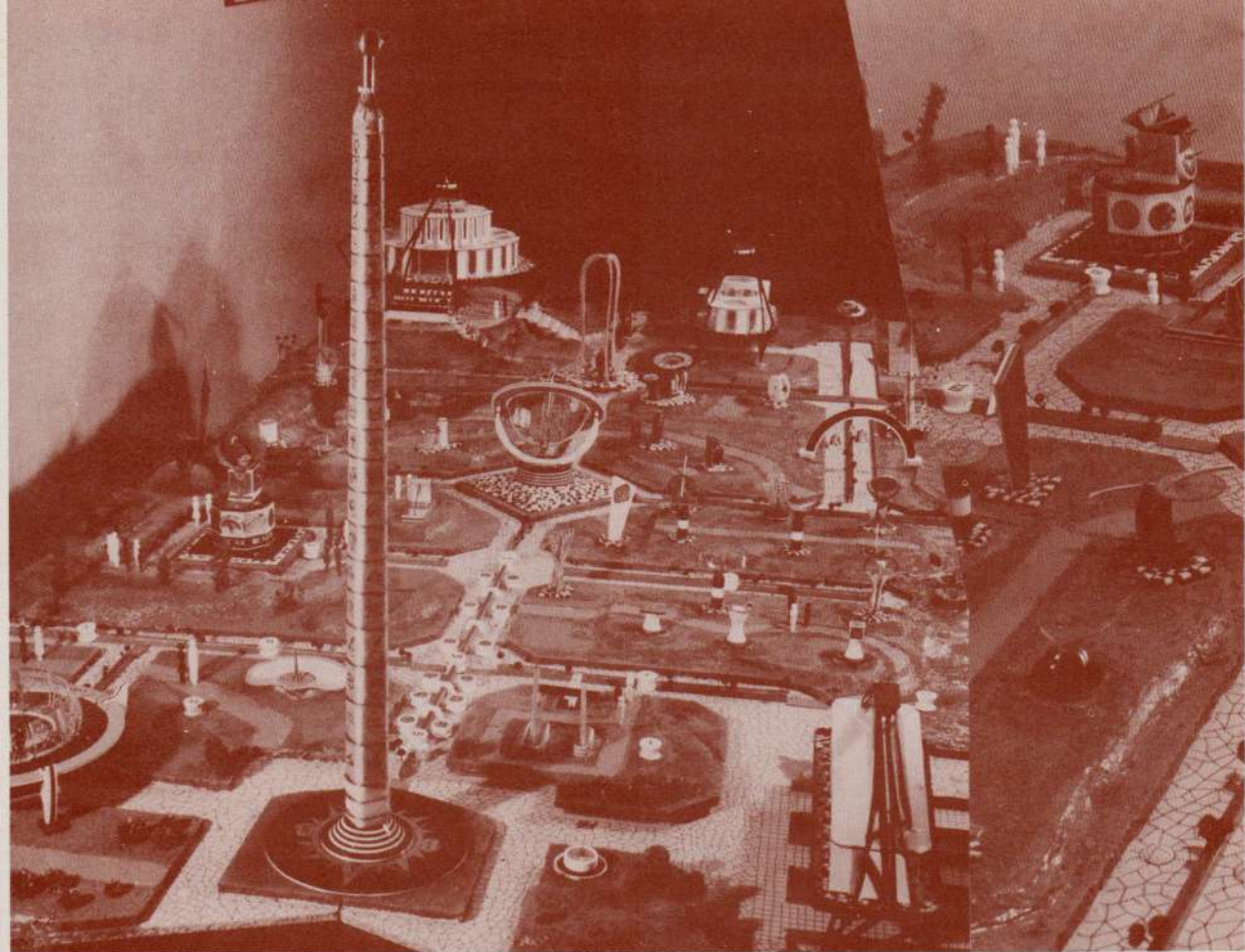
Das **CRONOMETRARIUM** ist ein Novum und wird hiermit jeder staatlichen oder privaten Institution zur Ausführung angeboten; mit voller Unterstützung des Autors.

CRONOMETRARIUM — maquette à l'échelle de 1:30 d'un parc avec un bâtiment d'exposition et un institut de chronométrie. La représentation d'environ 1000 objets et de systèmes destinés à la mesure du temps, comme par exemple: des obélisques, des cadrans solaires, des chronomètres curieux de toutes les époques, des méthodes d'indication, les principes de la mécanique, de l'électromécanique, une pendule de torsion, une pendule "Foucault", des méthodes d'enseignement pour la cinématique, la chronométrie, l'astronomie et des techniques pour la construction d'instruments de précision.

Le **CRONOMETRARIUM** est un projet unique au monde offert comme un ensemble à toute institution privée ou gouvernementale, avec tout l'appui de son auteur pour sa réalisation.

Aussi bien pour le **CRONOMETRARIUM** que pour le **GNOMONICUM** — noms y compris — tous les droits sont réservés, les démarches pour leur autorisation sont en train, et l'originalité des inventions de l'auteur Lothar M. Loske,

confirmée par sa première publication dans la revue *Universo* 40^e volume, avril 1983, de la Société d'Astronomie au Mexique, et dans la revue *Impacto* no. 1841 de juin 1985 au Mexique.



CRONOMETRARIUM (genus LC)

CRONOMETRARIUM — a maquete at the scale of 1:30 of a public park with an exhibition building and an institute for chronometry.

The exhibition of about 1000 objects and systems for time measurement, such as: obelisks, sun-dials, rare chronometers from all epochs, indication methods, the principles of mechanics, electromechanics, electronics, thermodynamics, optics and the mechanism of calendars, an electromechanical planetarium, a torsion and a "Foucault" pendulum, aids for teaching kinematics, chronometry, astronomy and techniques for the manufacturing of precision instruments.

The **CRONOMETRARIUM** is a unique project in the world whose execution as a whole is offered to any governmental or private institution, with the full backing of its author.

CRONOMETRARIUM — maqueta a escala de 1:30 de un parque con edificio de exhibición e instituto de medición del tiempo.

Representación de aprox. 1000 objetos y sistemas destinados a la medición del tiempo, tales como: obeliscos, relojes solares, medidores de tiempo curiosos de todos las épocas, métodos de indicación, principios de mecánica, electromecánica, electrónica, termodinámica, óptica, mecanismos de calendarios, planetario electromecánico, péndulo de torsión, y péndulo de "Foucault" de grandes dimensiones, modelos didácticos para la enseñanza de cinemática, cronometría, astronomía y técnica para la construcción de instrumentos de precisión.

El **CRONOMETRARIUM** es un novum, ofreciéndose como tal a cualquier institución estatal o privada para su realización, con el apoyo íntegro del autor.

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durch Erstveröffentlichung in dem Journal Universo, vol. 40, April 1983, der astronomischen Gesellschaft in Mexico, sowie in dem Journal Impacto, Nr. 1841, Juni 1985 in Mexico.



Lothar M. Loske
Scientist and Creative Genius

Lothar M. Loske, born in West Germany, is now living and working in Mexico City.

Professor Loske has taught in universities in Germany and Mexico. A scientist, designer and artist, he has published many books, including *Cronometria*. Numerous scientific and technical articles written by Loske have been published by Springer-Verlag of West Germany, and circulated in Vienna, Munich, Barcelona, Heidelberg, Berlin and New York.

A rare facet of the genius of Loske is his talent for making works of art from his sun dial designs. The timekeeping instruments are also examples of precise engineering.

The genius of Lothar M. Loske is not only evident in the fact that his sun dials are technically peerless, but also in the fact that each of his original designs is an artistic achievement. Aesthetically acclaimed, these sun dials are popular with collectors. Since Loske is the only man designing and producing these works of art, the sun dial purchased today will appreciate in value tomorrow.



Chrono Art
The exclusive distributor of
Lothar M. Loske.

Chrono Art's President, Richard Schmolke, invites your inquiries about the possibility of obtaining a Sun Dial.

Loske Original Sun Dials can be purchased in a wide range of prices; from \$970 to \$32,000.

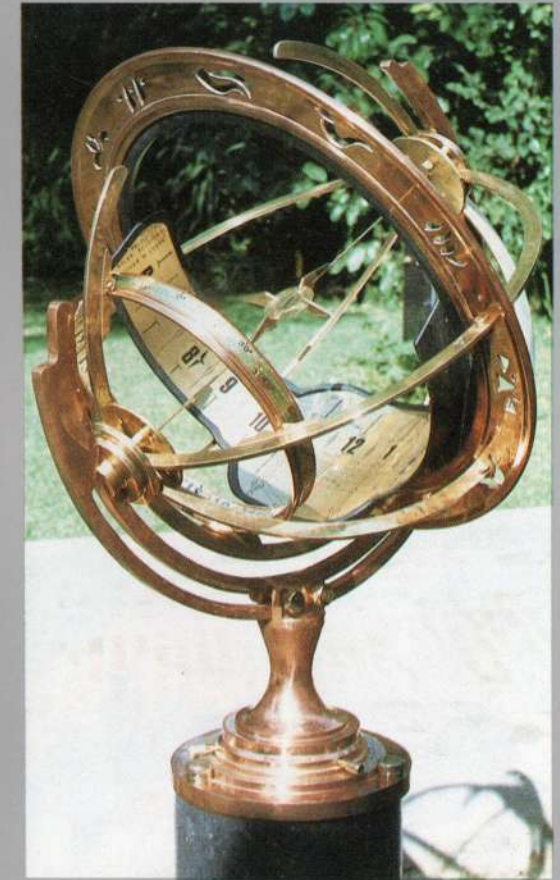
Many educational institutions, libraries, universities, museums, etc., see the educational advantage and historical value of purchasing Sun Dials. On the other end of the scale, many architects commission Sun Dials for installation in office buildings, public buildings and private homes.

For a personal presentation, please call for an appointment and Richard Schmolke will give you information in depth at your convenience.

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Sun Dials

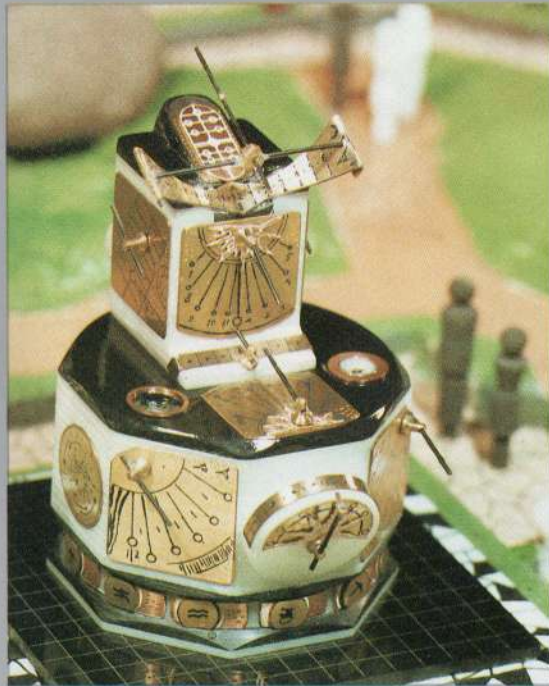
The Science of Time
The Art of Timekeeping



An Ancient Necessity, A Modern Art

Sun dials are popular today as intellectual heirlooms of the past. The mystique of the astronomical sciences is embodied in chronometry, the oldest science of measuring time.

Historically, sun dials have reflected the intellectual approach to the science of timekeeping and to the practical application of that science for man's use. Sun dials were used as instruments for determining time through the 18th century, even though mechanical clocks have been available for nine hundred years.



Universal Standard Time

Although the performance of a sun dial can be surpassed by that of any clock or watch in the keeping of conventional time, only a sun dial has the ability to perpetually keep sun time, even during the night or when clouds cover the face of the sun dial.

The dials measure "true solar time" which differs considerably from standard time by which mechanical clocks are set. Sun dials are used as a standard for accurately setting clocks around the globe.

Because they employ the theory of "astronomical noon", sun dials measure time differently from a clock. Astronomical noon corresponds to the moment each day when a shadow is shortest. This is when the sun changes direction from east to west.

An Educational Work of Art

Only the sun dial can register the variations in true solar time and solar mean time, standard time, world time, and sidereal time. The face of a sun dial can show the solar mean time and standard time in all time zones, the months, the days of the month, the angle of the Zodiac and the length of each day.

Although it is not as simple to read standard time or a calendar date from a sun dial as from a clock, it is much more interesting and instructional.

The fact that this scientific instrument is also acclaimed as a unique work of art adds to the aesthetic and educational value.



Biblioteca *Ars Temporis* Lothar M. Loske

Esta biblioteca se concibió como un espacio de estudio y consulta en el que se fusionan, de manera única en México, una exposición permanente de relojes solares con la infraestructura propia de una biblioteca especializada.



Los relojes solares que se exhiben, forman parte de la colección *Ars Temporis*, creada por Lothar M. Loske entre 1969 y 1990.

Tres de estas obras se donaron al Museo de Ciencias Físico-matemáticas de Alemania, ubicado en Dresden.

Una réplica de cada una de ellas se encuentra en fabricación, aquí en el Centro de Física Aplicada y Tecnología Avanzada de la UNAM, *Campus Juriquilla*.



Las sombras que proyectan los indicadores de estos relojes sobre sus carátulas se desplazan de un extremo a otro, marcando la hora desde la mañana hasta la tarde, lo que requiere que los relojes se orienten adecuadamente. No todos los relojes en exhibición fueron diseñados para su uso en México; dos de ellos incluso pueden instalarse en cualquier parte del hemisferio norte.

La mayoría marca la hora solar verdadera, que generalmente difiere de la hora local.

El Belora, mostrado aquí en la portada, posee un pequeño calendario solar. Este reloj permite determinar la hora solar del meridiano que rige la hora en la parte central de México, además de la hora local.

En los carteles que se exhiben en esta biblioteca se explica el funcionamiento básico de los relojes solares.

Pueden consultarse además las cédulas correspondientes a cada una de las obras expuestas, así como la biografía de Lothar M. Loske.

Una pequeña exposición fotográfica muestra relojes solares de varios tipos, algunos de ellos monumentales, instalados en diferentes partes del mundo.



El acervo de la *Biblioteca Lothar M. Loske* está integrado por una colección que satisface necesidades de información en las áreas y disciplinas afines a los programas de estudio e investigación que se desarrollan en el CFATA, así como también libros relacionados con la medición y el estudio del tiempo en general, como complemento a la exposición "*Ars Temporis*".



Frente a la biblioteca se instalará un reloj solar monumental con forma de esfera anular de cinco metros de diámetro con carátulas, que marcarán ocho diferentes tipos de hora.

Además, indicará la hora de cualquier parte del mundo, así como la fecha. Cinco de las carátulas tendrán movimiento controlado por una computadora que se encontrará dentro de la biblioteca. Un software especialmente diseñado, mostrará al usuario el funcionamiento del reloj y la manera de operarlo. Se tiene planeado concluir esta obra en el año 2006.



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Ars Temporis
Lothar M. Loske