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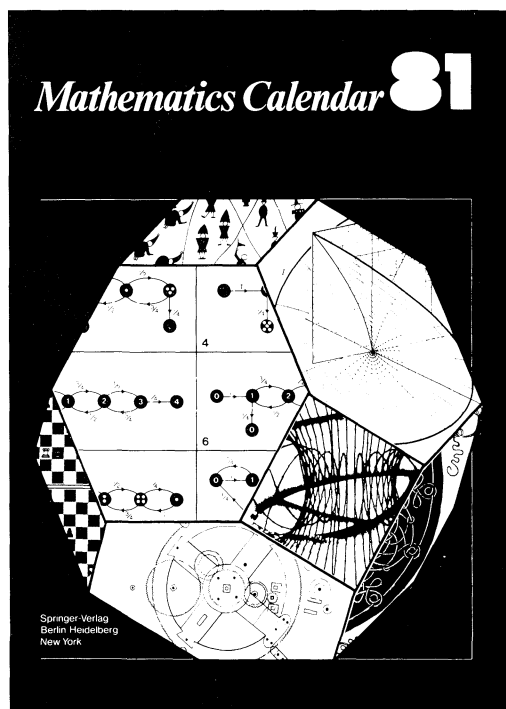To: **The Head Librarian/The Library Committee**

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The 1981 Springer Mathematics Calendar

Mathematics Calendar **81**

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January: The Dictator Theorem

A small set of apparently reasonable conditions on a voting system must necessarily lead to the institution of a dictator – Arrow's paradox, mathematically an ultrafilter theorem, is illustrated and re-solved democratically by modifying the conditions

February: Minimal Surfaces

Plateau's problem from its initial mathematical formulation to recent applications – with drawings and color photographs of soap films of minimal surface area.

March: Knots

Discusses a phenomenon of the 3-dimensional space we live in which fascinated Dürer and Gauss and still fascinates artists and mathematicians

April: Computer Chess

Have human chess champions a chance against computer programs? The match between David Levy and CHESS 4 8 provides some interesting insights

May: Partitions of 3-Space

A recent application to crystallography of group-theoretical methods: a 38-faced Dirichlet domain.

June: Arrangement of nine groups of four

"symmetries = agreement = harmony" Max Bill gives an artist's impression of the influence of mathematical principles on the per-ception of art and architecture with a striking illustration based on Pythagoras' theorem

July: Edgeworth and Averages

Most natural events were assumed to be "normal" until 1883, when F Y Edgeworth attacked the universal applicability of the Gaussian distribution in statistical analysis

August: The Probabilistic Abacus

A game played with chips on graphs illustrates problems in discrete probability and the Ehrenfest model for diffusion

September: Self Inverse Fractals and Kleinian Groups

Approximations of typical minimal self inverse sets, obtained by a new recursive construction due to B Mandelbrot, generate un-expectedly beautiful color computer graphics

October: An Analogue Computer from 82 B.C.

Mysterious bronze objects found in 1900 on a shipwreck dating back to Roman times, discovered in the 1970's to be the oldest known analogue computer.

November: Strange Attractors

The "chaotic" time evolution observed in many natural systems can be related to the sensitive dependence on initial conditions that makes strange attractors strange Computer graphics illustrate these intriguing objects

December: Radon Transforms and Tomography

The mathematics of computer tomography, a remarkable example of successful application of technology in medicine

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