



Plaited polyhedra

Jean-Jacques Dupas



Martin Gardner

MARTIN GARDNER

WHEELS, LIFE

AND OTHER

MATHEMATICAL

AMUSEMENTS



Article

Plaiting Polyhedrons

**Mathematical Games
columns**

September 1971

The plaiting of Plato's
polyhedrons and the
asymmetrical yin-yang-lee



John Gorham(1814-1899)

A SYSTEM
FOR
THE CONSTRUCTION
OF
CRYSTAL MODELS

ON THE TYPE OF AN ORDINARY PLAIT;

EXEMPLIFIED BY THE FORMS BELONGING TO THE SIX
AXIAL SYSTEMS IN CRYSTALLOGRAPHY.

By John Gorham

A system for construction of
crystal models on the type
of an ordinary plait

E. & F. N. SPON, 125, STRAND, LONDON.

NEW YORK: 12, CORTLANDT STREET.

1888.



John Gorham : Cube

Fig. 3.

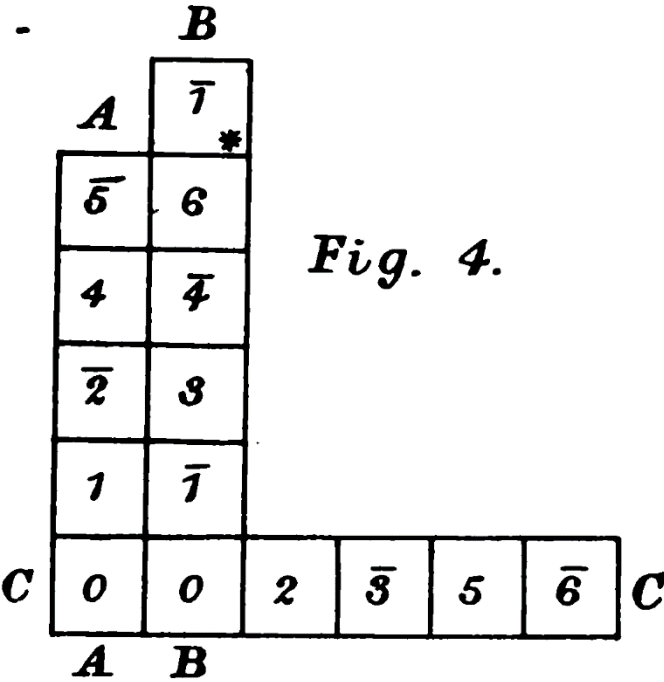
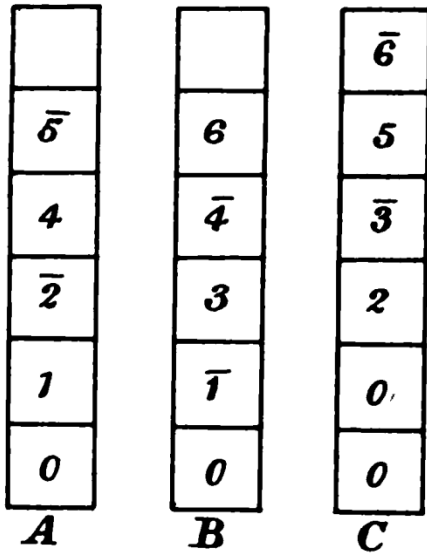


Fig. 4.

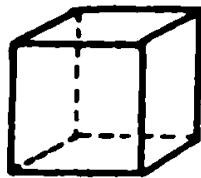


Fig. 5.



John Gorham : Sectored Cube

Set out in their true acetalineal order for final adjustment, as Fig. 10.

Fig. 9.

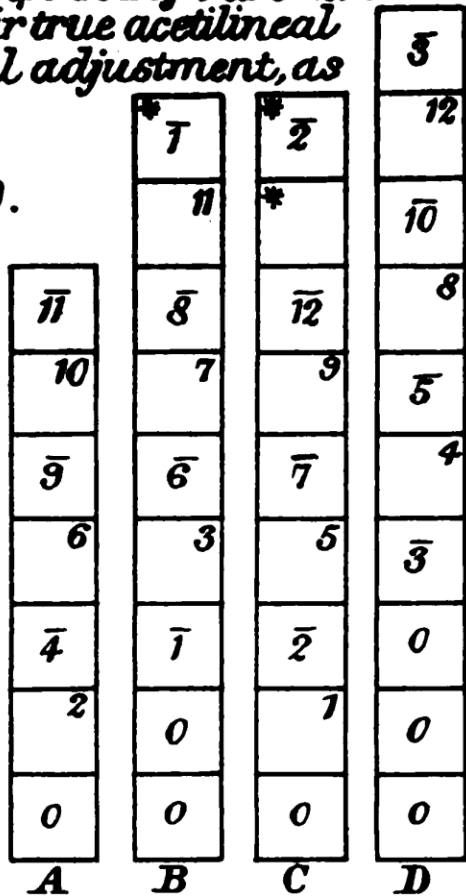
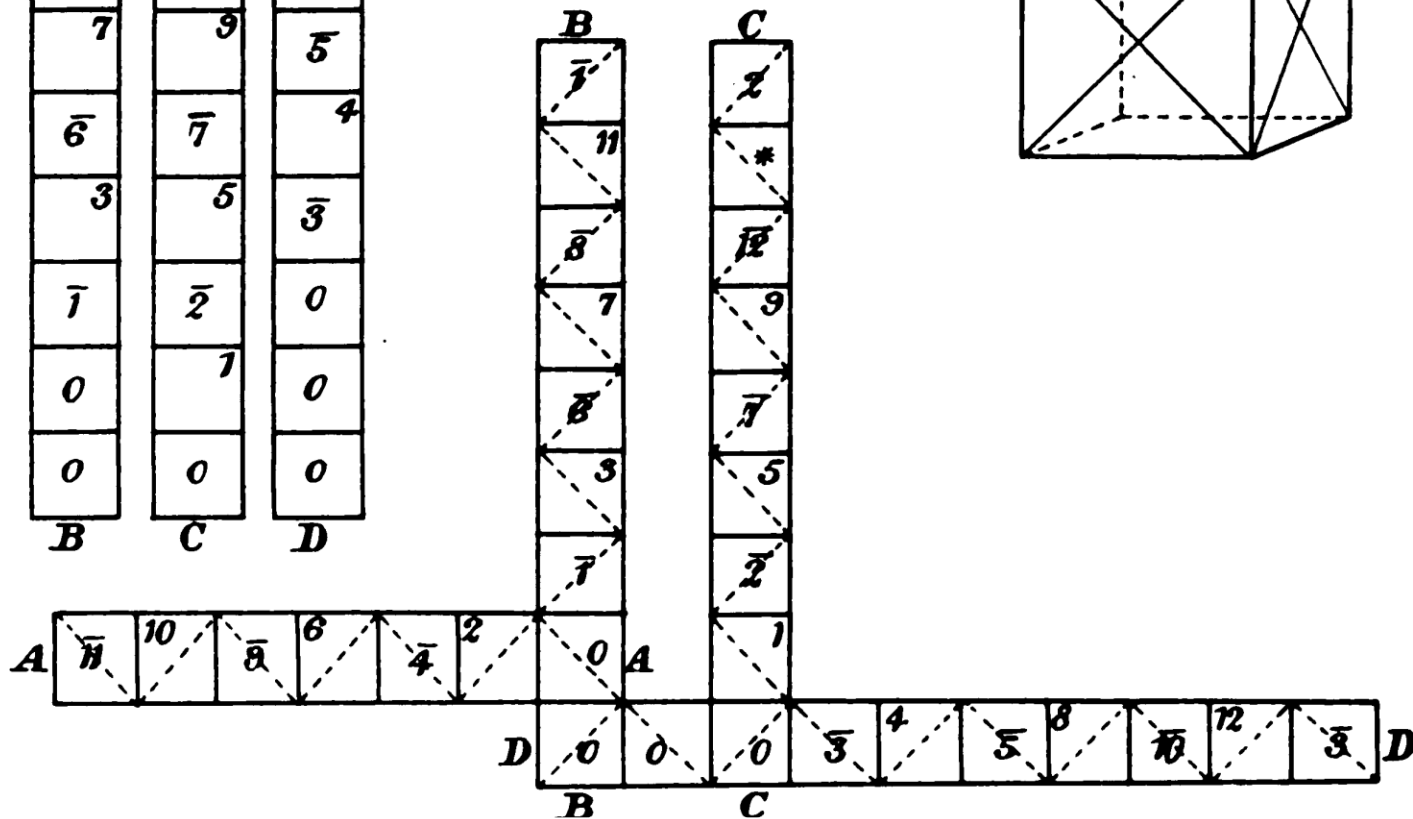


Fig. 10.
TYPICAL CUBE ADJUSTMENT.



TYPICAL CUBE.

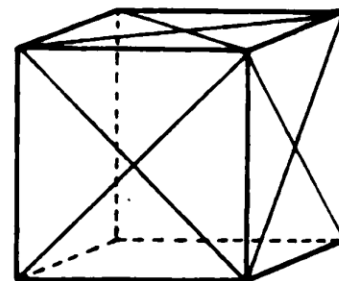


Fig. 11.



John Gorham : Rhombic Dodecahedron

RHOMBIC DODECAHEDRON.

$109^{\circ}28'16''$
 $70^{\circ}31'44''$



Fig. 12.

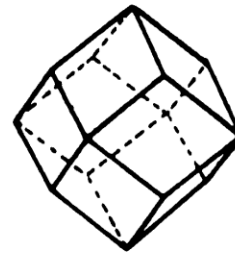
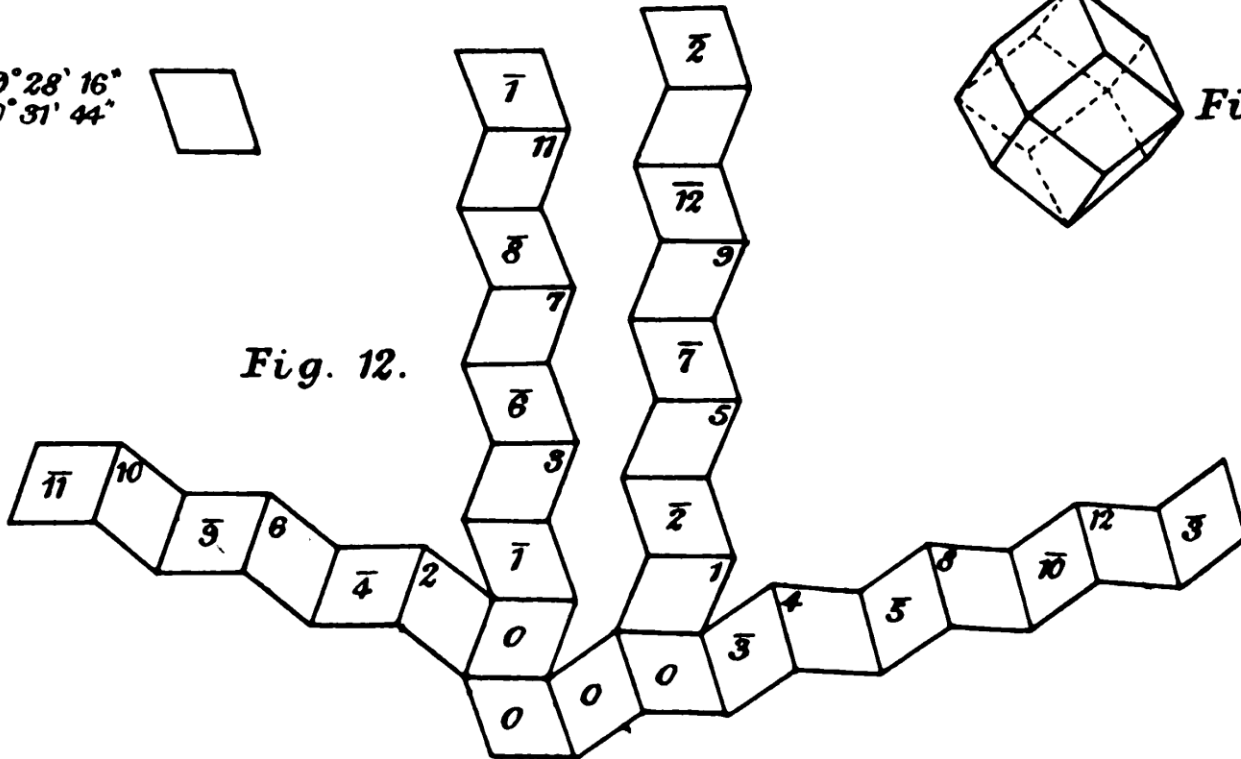
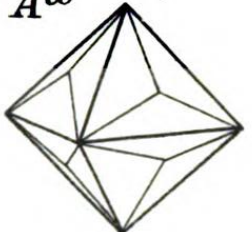


Fig. 13.



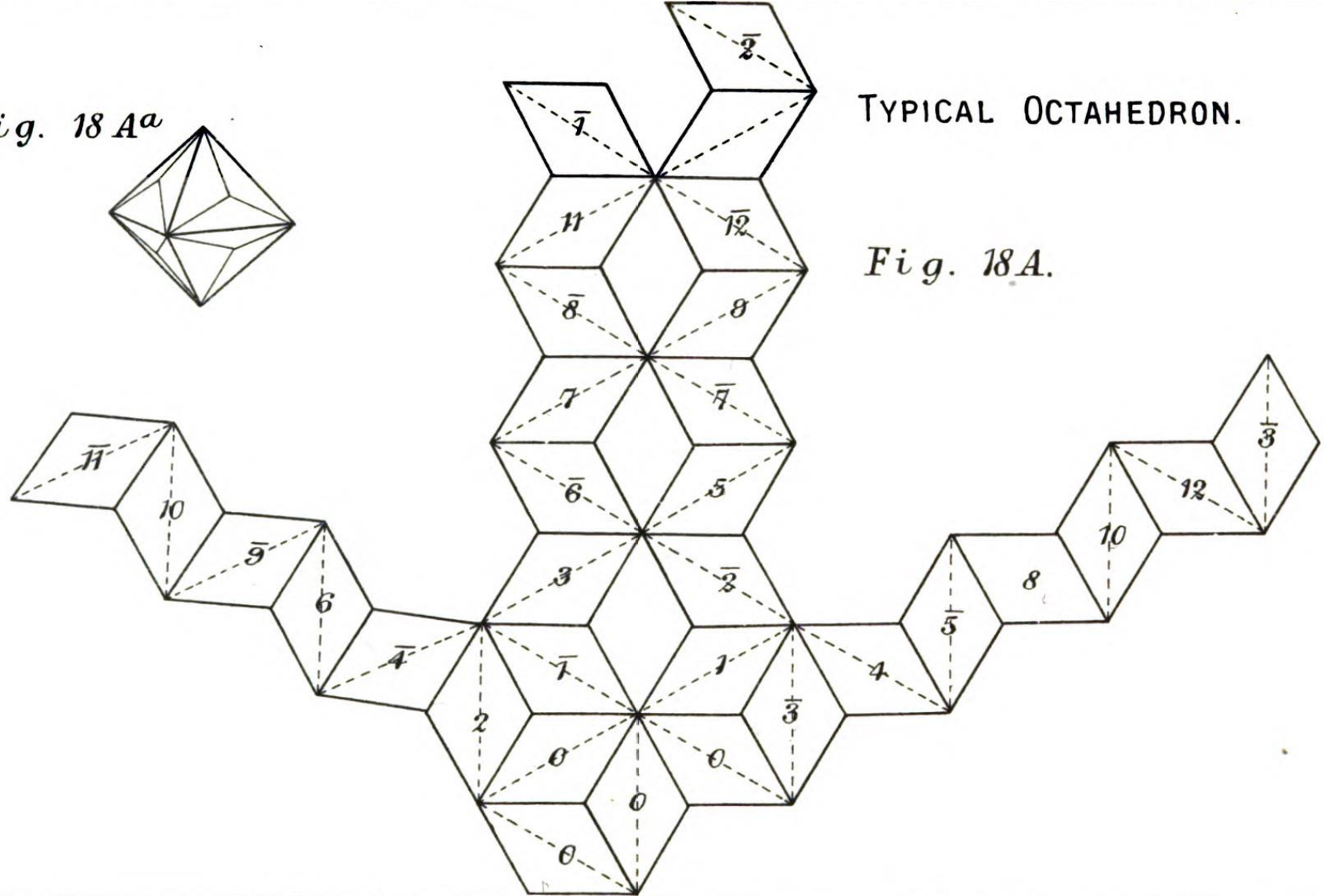
John Gorham : Sectored Octahedron

Fig. 18 A^a



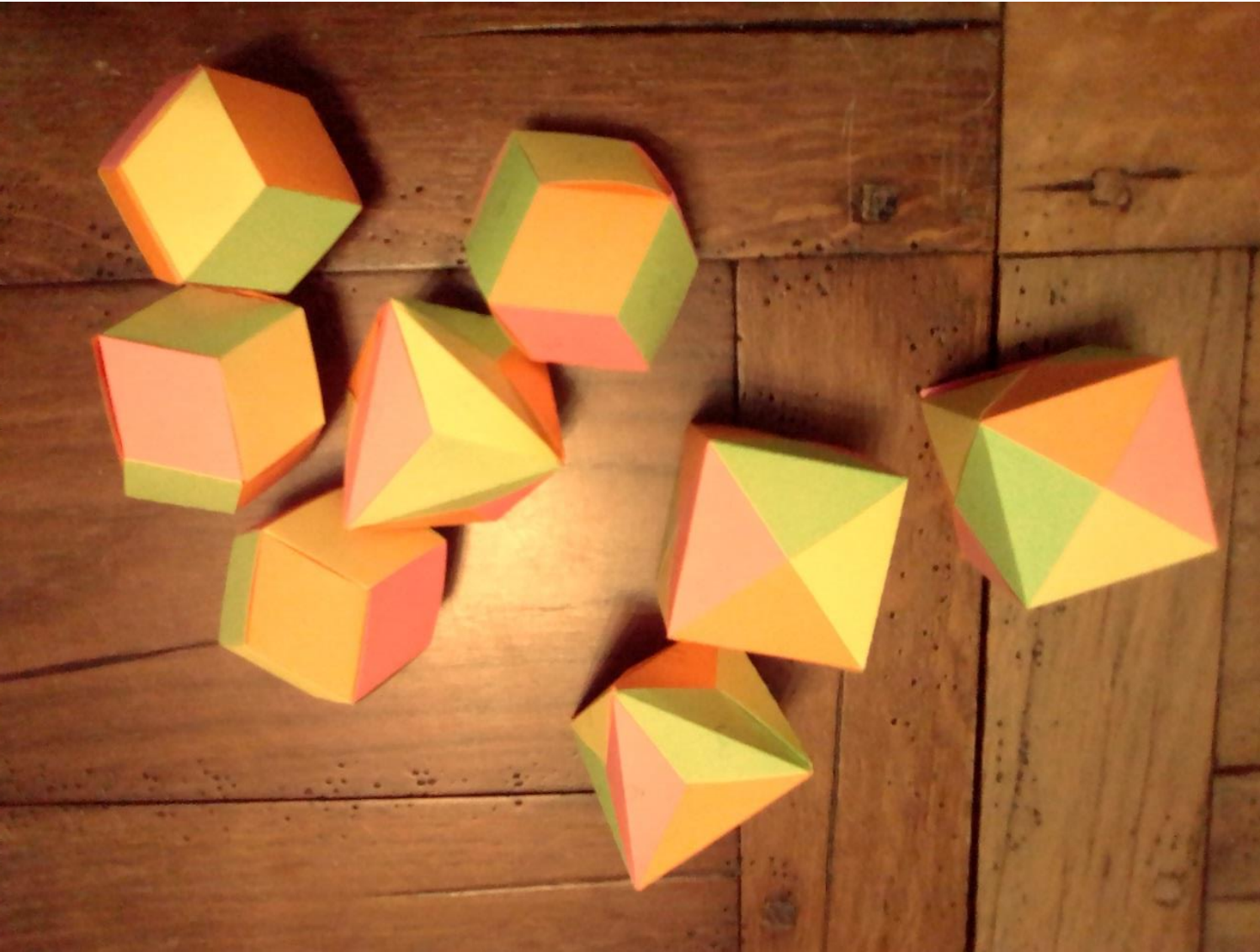
TYPICAL OCTAHEDRON.

Fig. 18A.





models





John Gorham: Crystals

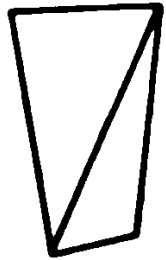


Fig. 30.

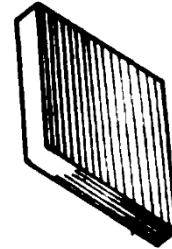
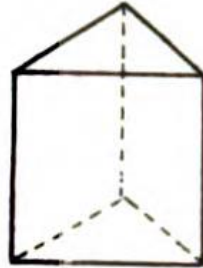
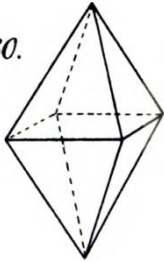


Fig. 42.

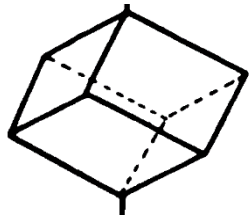
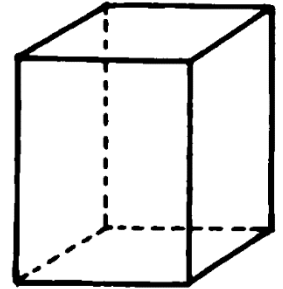
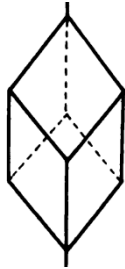


Fig. 76



Fig

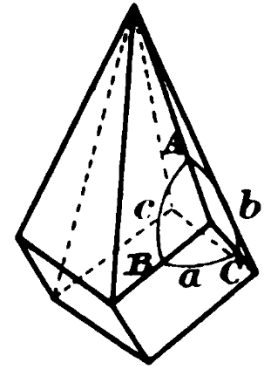
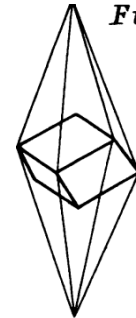


Fig. 93^a

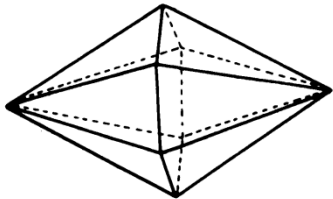
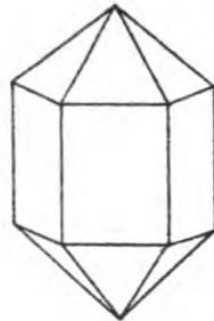
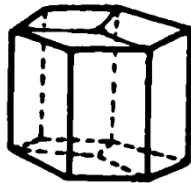


Fig. 95.

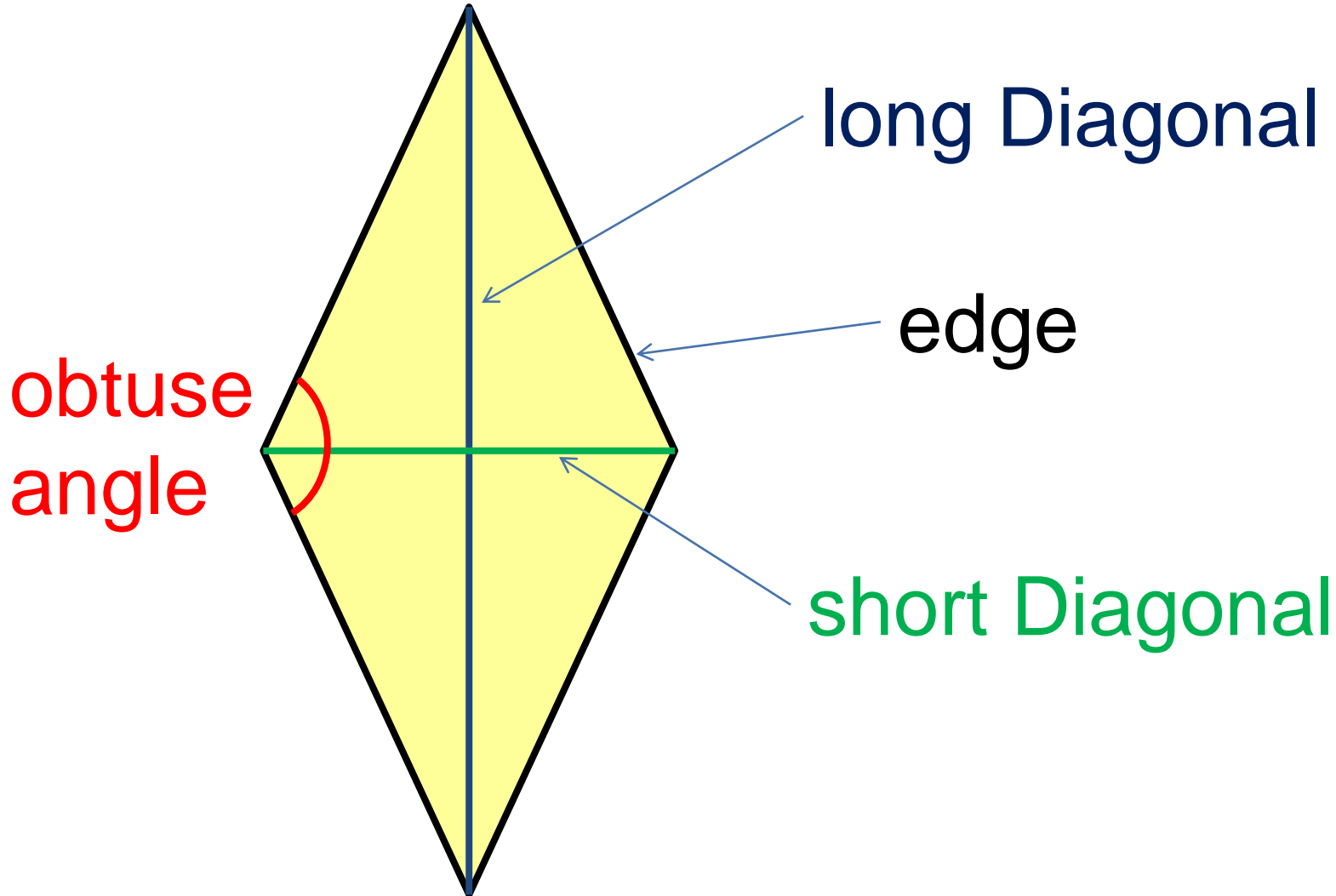




A.R. Pargeter : Plaited Polyhedra



A.R. Pargeter Rhombus



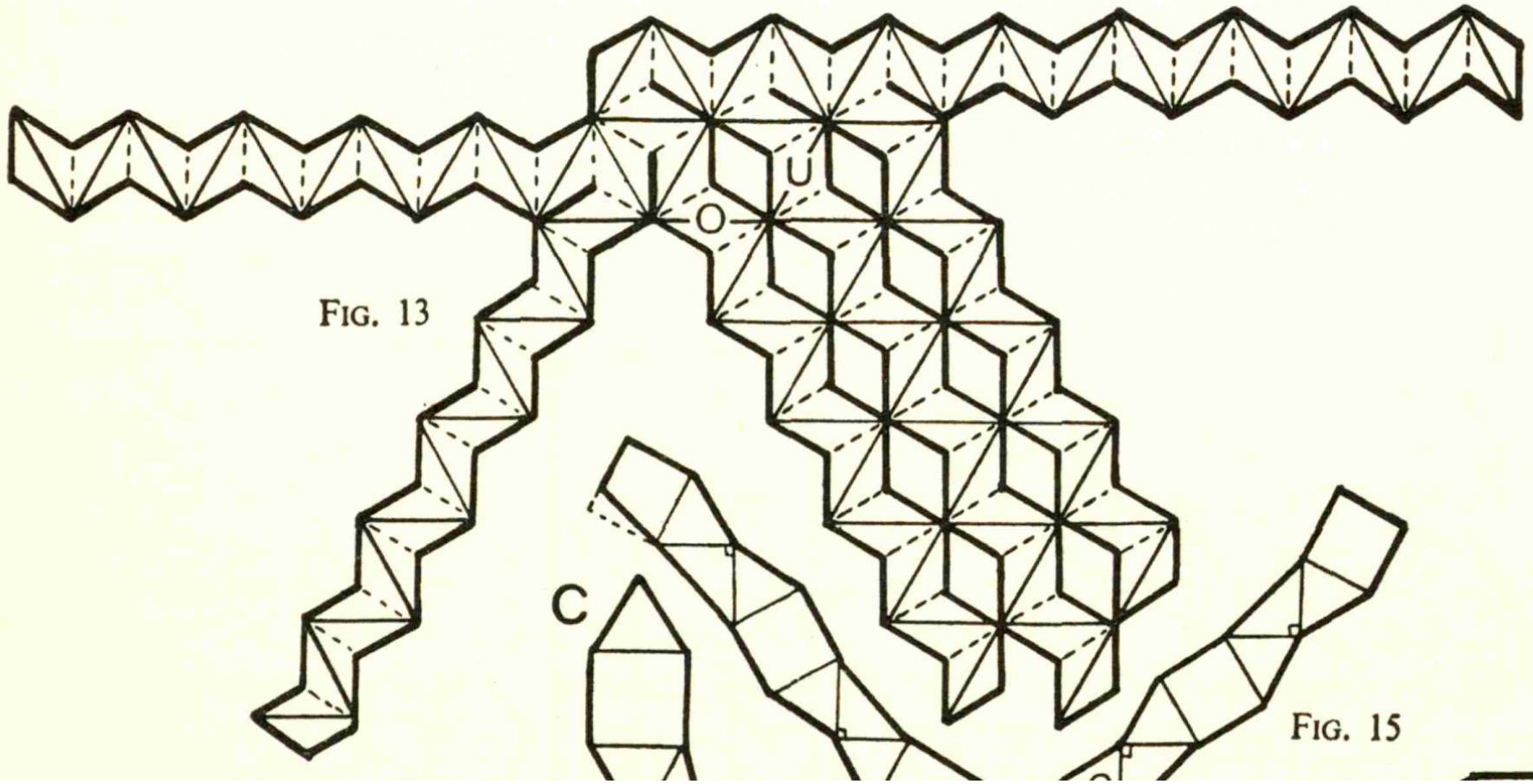


Octahedral Symmetry

Model	Angle	Creases
Octahedron	120°	Long Diagonals
Triakis Octahedron	$119^\circ 3'$	Long Diagonals + edges
Cube	90°	Short Diagonals
Rhombic Dodecahedron	$70^\circ 32'$ (acute)	edges



A.R. Pargeter Plaited Polyhedra Icosahedron





A.R. Pargeter Icosaheral Symmetry

Model	Angle	Creases
Icosahedron	120°	Long Diagonals
Triakis Icosahedron	$119^\circ 3'$	Long Diagonals + edges
Rhombic Triacontahedron	$116^\circ 34'$	Edges
Pentakis Dodecahedron	$111^\circ 24'$	Short Diagonals + edges
Dodecahedron	108°	Short Diagonals
Great Dodecahedron	120°	Long Diagonals + edges
Small stelled dodecahedron		
Great stelled dodecahedron		



A.R. Pargeter





A.R. Pargeter Plaited Polyhedra

- Stella Octangula
- Cuboctahedon
- Stellated Rhombic dodecahedron
- ...



Mathematical Models

MATHEMATICAL MODELS

BY

H. MARTYN CUNDY

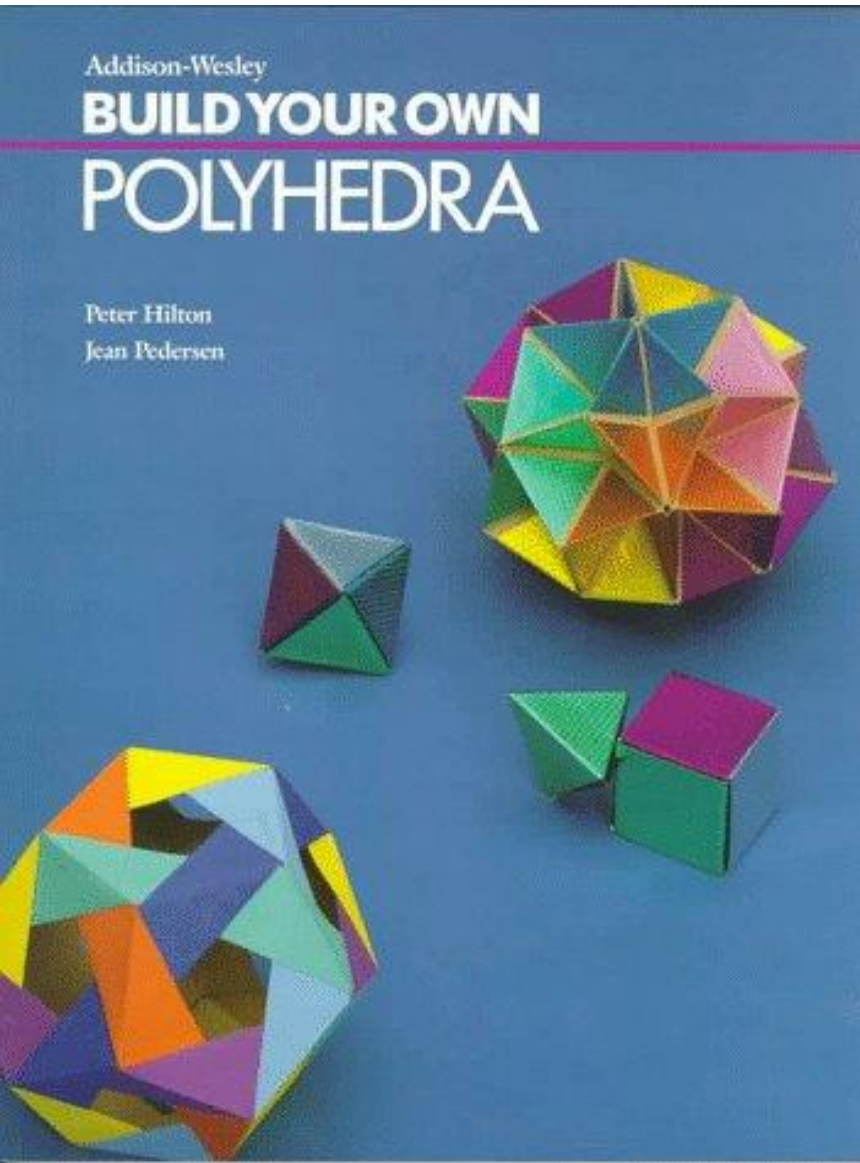
PROFESSOR OF MATHEMATICS
UNIVERSITY OF MALAWI

AND

A. P. ROLLETT



Build your own polyhedra



Jean J. Pedersen(1934-2016)

Peter J. Hilton(1923-2010)