NEW PHYSICS THEORY

A THEORY OF DISTANCE AND TIME

James A. Putnam
A new physics theory based upon the premise that all theory should be reducible to empirical properties. The two empirical properties, from which all mechanical knowledge is gained, are distance and time. The fundamentals of theoretical physics are redefined to reflect this premise. The physical properties introduced are directly implied by measurements of distance and time. Their units are reducible exclusively to those of distance and time. A universally constant measurement of time is introduced. This finding points to the conclusion that: True time is absolute.
# TABLE OF CONTENTS

## TWO ELEMENTS OF PHYSICAL ACTION 1

- Constant Velocity  2
- Change of Velocity  2
- Change of Velocity Per Unit Distance  4
- Energy of a Freely Falling Object  5

## LIGHT AND RELATIVITY TYPE EFFECTS 7

- Measuring the Speed of Light  7
- Interpreting Pound-Rebka  9
- Speed of Light  12
- Acceleration Due To Gravity  15
- Freely Falling Matter and Light  18
- Gravitational Energy  19
- Variable Length of Photons  23
- General Relativity Type Effects  24
- Origin of Special Relativity Type Effects  32
- Particle to Photon Energy Transfer  33
- Speed and Special Relativity Type Effects  39
- Electromagnetism and Relativity Type Effects  43
- Particle Energy and Frequency  48
- Photon Energy  50
- Compton Effect  55
- Photon Momentum  56

## ELECTRIC EFFECTS AND THE HYDROGEN ATOM 58

- Atomic Radius  59
- Electric Charge  63
- Electric Permittivity  65
- Fine Structure Constant  67
- Magnetic Permeability  70
THE NATURE OF MASS 116

Mass and the Radius of the Hydrogen Atom 116
Universal Gravitational Constant 120
Particle Polarity 125
Photon Electromagnetism 126
Gravity 127
A New Equivalence Principle 131
Nuclear Physics 132
Neutrons 133
Formation of Atoms 134
Protons 135
Quark Theory and the Speed of Light 136
Creation of Matter 137
Antimatter 138

THE STRUCTURE OF THE UNIVERSE 139

Natural Units of Measurement 139
Continuity and Discontinuity 140
Cosmic Background Radiation 140
Energy and Momentum 141