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WINTER COLLEGE ON LASERS, ATOMIC AND MOLECULAR PHYSICS

(21 January - 22 March 1985)

A COMPACT AND RELIABLE Nd:YAG LASER FOR OPTHALMIC MICROSURGERY

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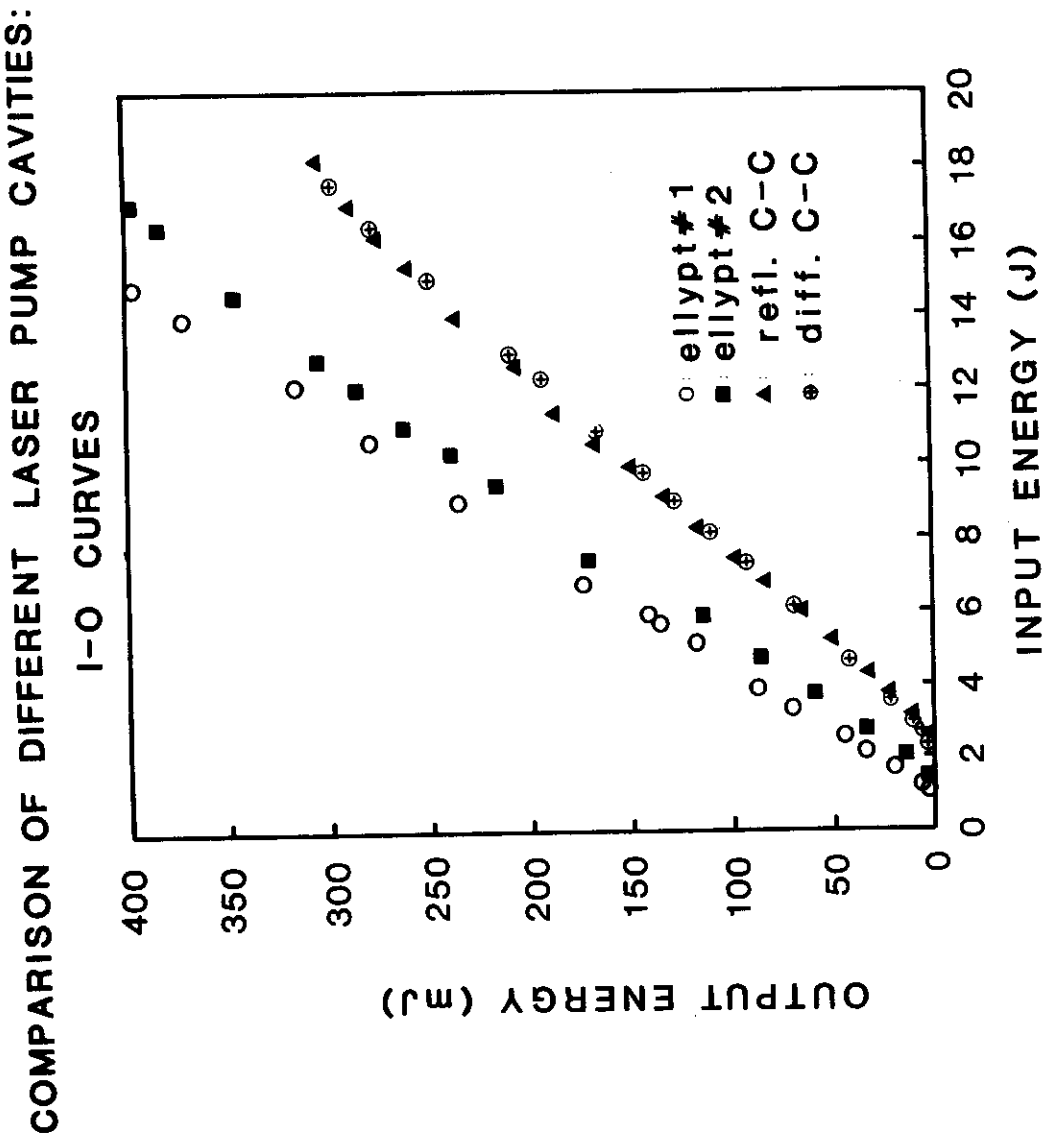
Q-SWITCH Nd:YAG LASERS IN OPHTHALMIC MICROSURGERY

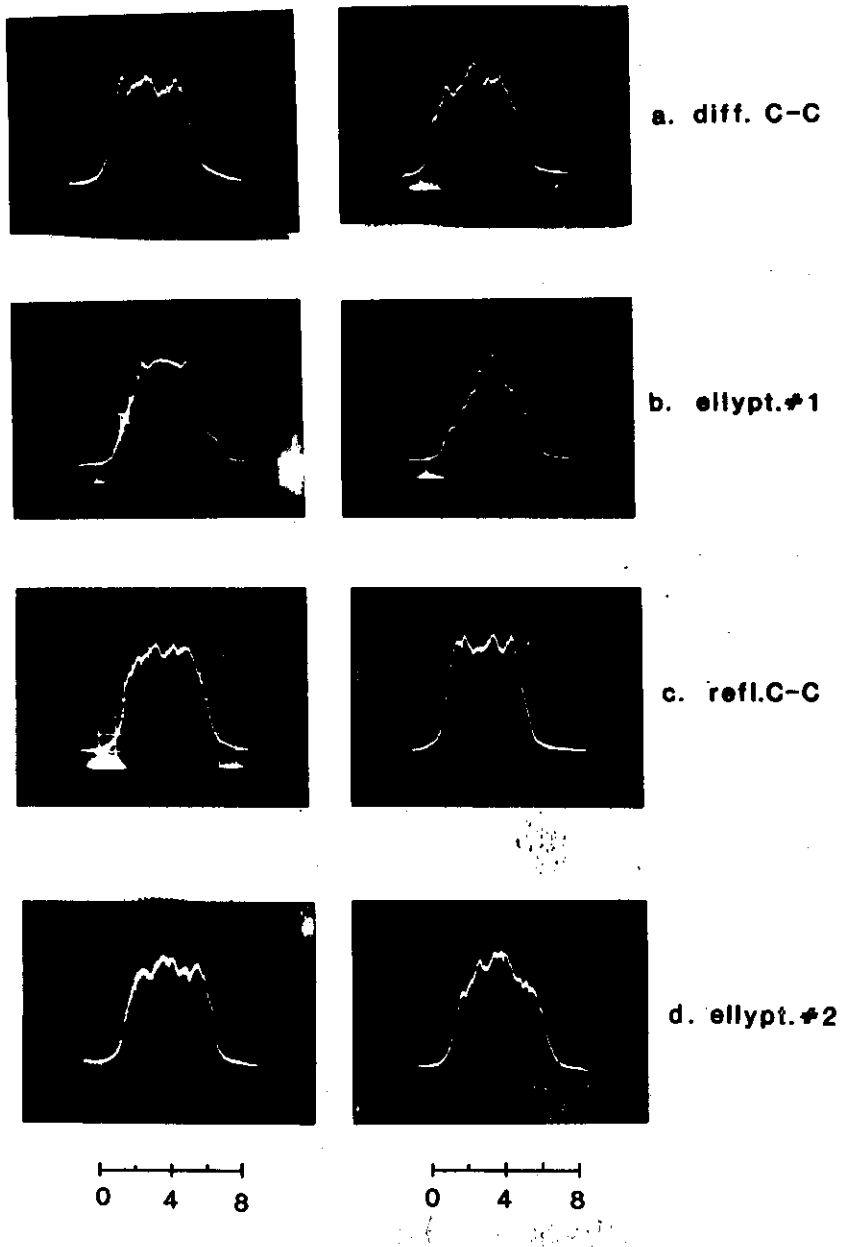
- VAST POPULARITY ATTAINED BY THE Nd:YAG LASER IN OPHTHALMOLOGY FOR THE DISRUPTION OF TRANSPARENT MEMBRANES BOTH IN THE ANTERIOR AND IN THE POSTERIOR CHAMBER OF THE EYE
- Q-SWITCHING Vs MODE-LOCKING
- THIRD GENERATION OF Nd-YAG Q-SWITCH LASERS: COMPACTNESS AND RELIABILITY

DEVELOPMENT OF A Q-SWITCH Nd:YAG LASER FOR OPHTHALMIC APPLICATIONS AT C.E.Q.S.E-EVLASER

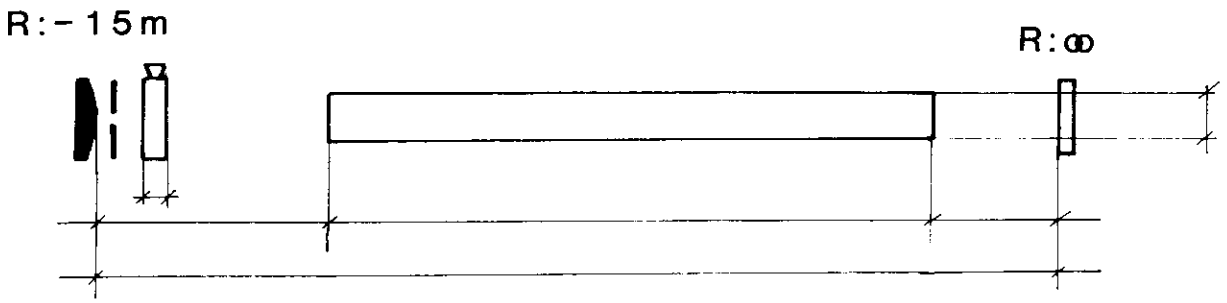
- THE REFLECTING CLOSE-COUPLED CAVITY: A COMBINATION OF HIGH EFFICIENCY AND EXCELLENT BEAM QUALITY
- STABLE AND UNSTABLE RESONATOR CONFIGURATIONS
- EFFICIENCY ENHANCEMENT WITH PLASTIC ENERGY CONVERTERS
- PLASTIC OR GLASS PASSIVE Q-SWITCH ELEMENTS FOR RELIABLE OPERATION



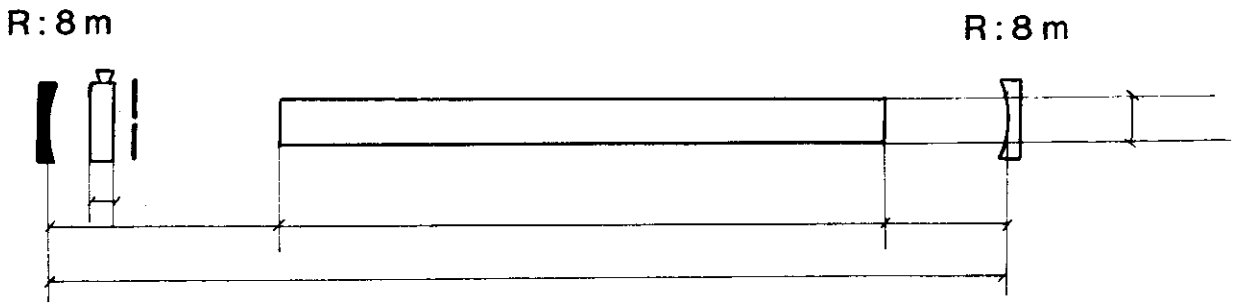
COMPARISON OF DIFFERENT LASER PUMP CAVITIES:
BEAM DISTRIBUTION



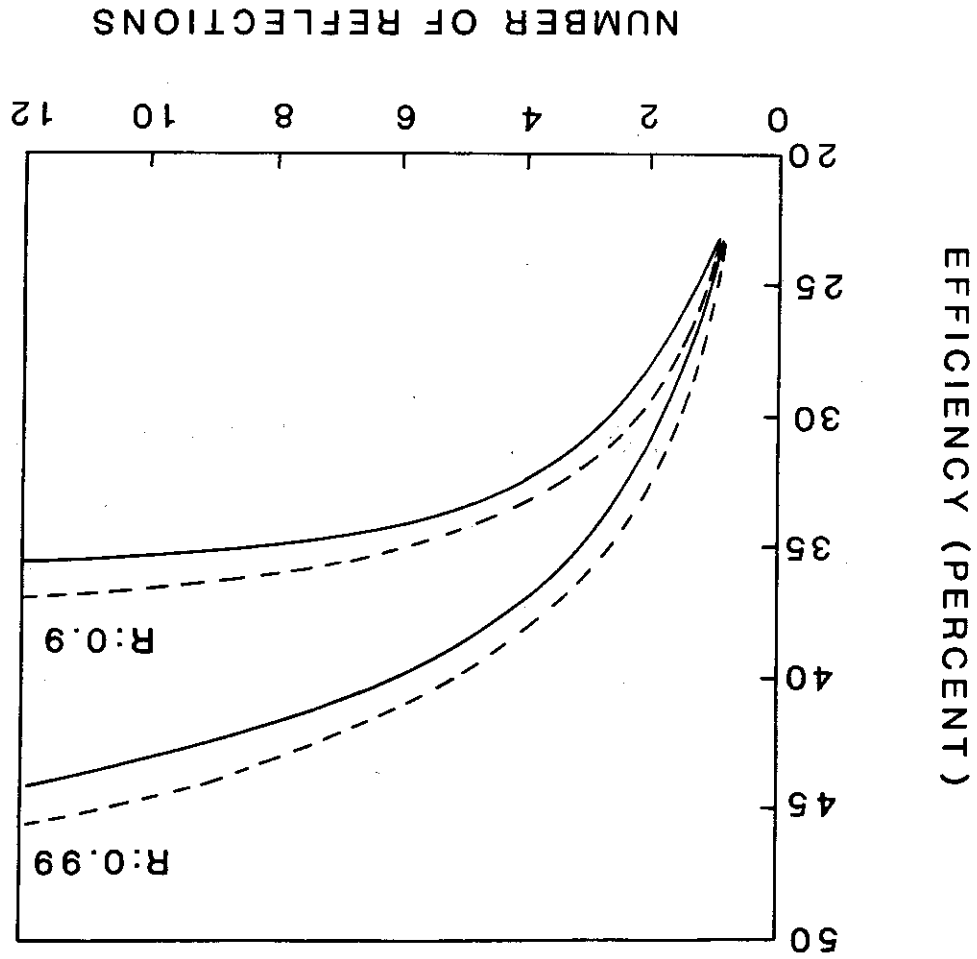
Nd:YAG LASER CONFIGURATIONS



a. unstable resonator

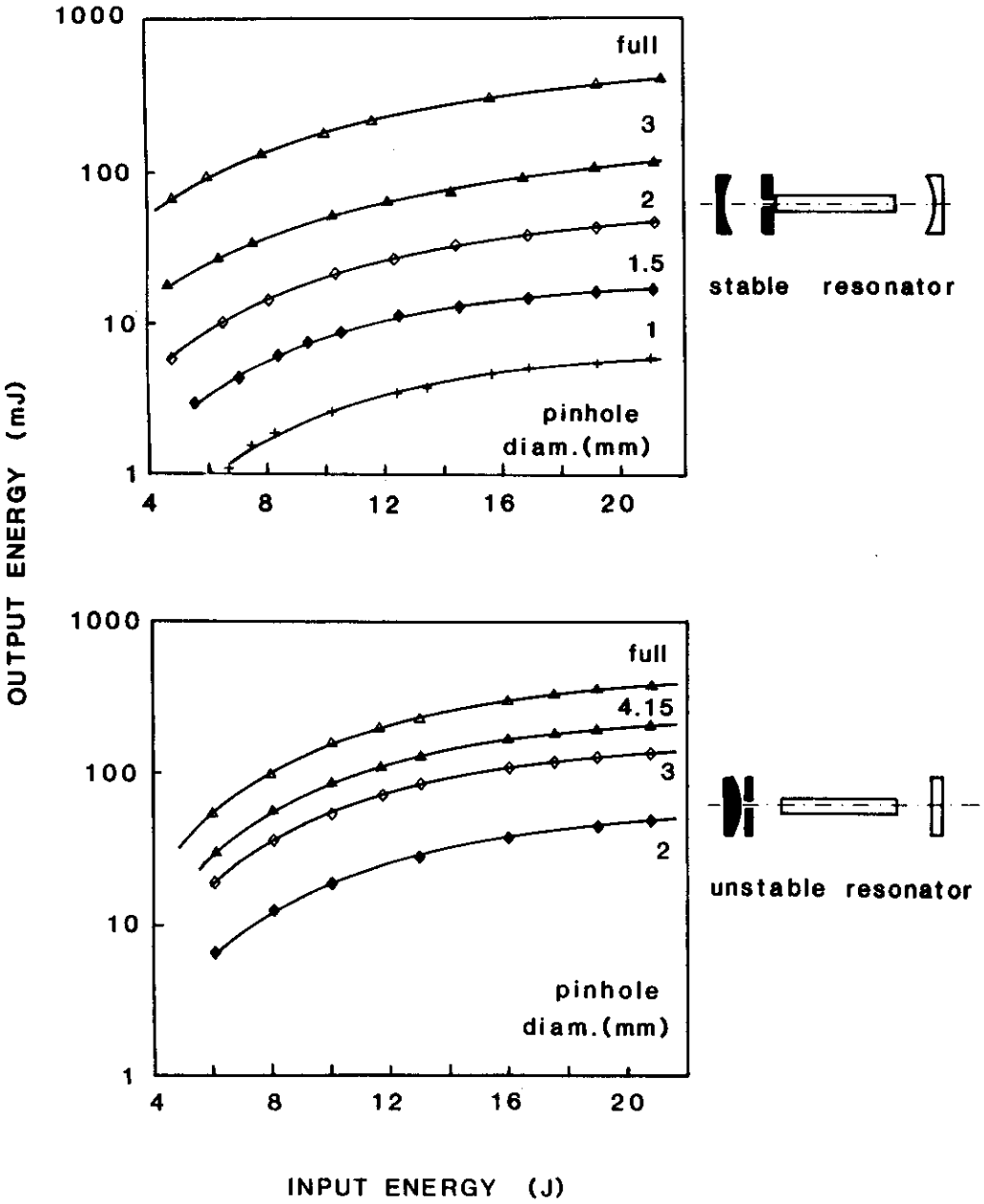


b. stable resonator



INPUT-OUTPUT CURVES

OF THE Nd:YAG LASER

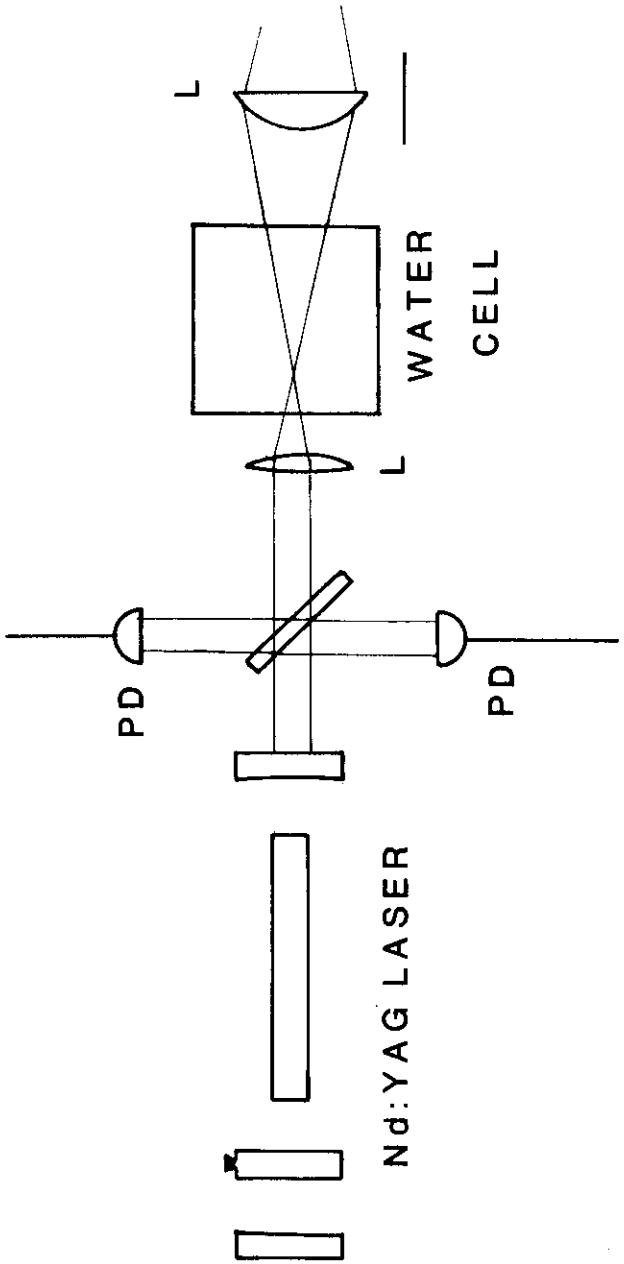


PERFORMANCES OF THE Nd:YAG LASER

- PUMP CAVITY: Reflecting close-coupled
- PUMP ENERGY: 0-30 J
- PUMPING EFFICIENCY: 2%

- OUTPUT ENERGY (Free-running)	ST	0-500	0-30
	UN	0-400	0-80
- OUTPUT ENERGY (Q-Switch)	ST	300	15
	UN	200	80
- DIVERGENCE	ST	4	1.2
	UN	1.5	0.8
- STABILITY (ΔE/E)	ST	3%	2%
	UN	1.1%	1.1%
		M.M.	S.M.

LAYOUT OF THE
EXPERIMENTAL APPARATUS



DETERMINATION OF
BREAKDOWN THRESHOLDS
IN LIQUIDS

- Laser pulse Energy: 0-80 mJ M.M.
- Laser pulse duration: 5 or 12 ns.
- Cone angle: 11° or 16°
  (without B.E. for M.M., with B.E. for S.M.)

BREAKDOWN CURVES

WITH MULTIMODE Q-SWITCH LASER