

BRAIN STORMING MEETING
ON
MAN, ANIMAL & SCIENCE
(September 15, 2011)



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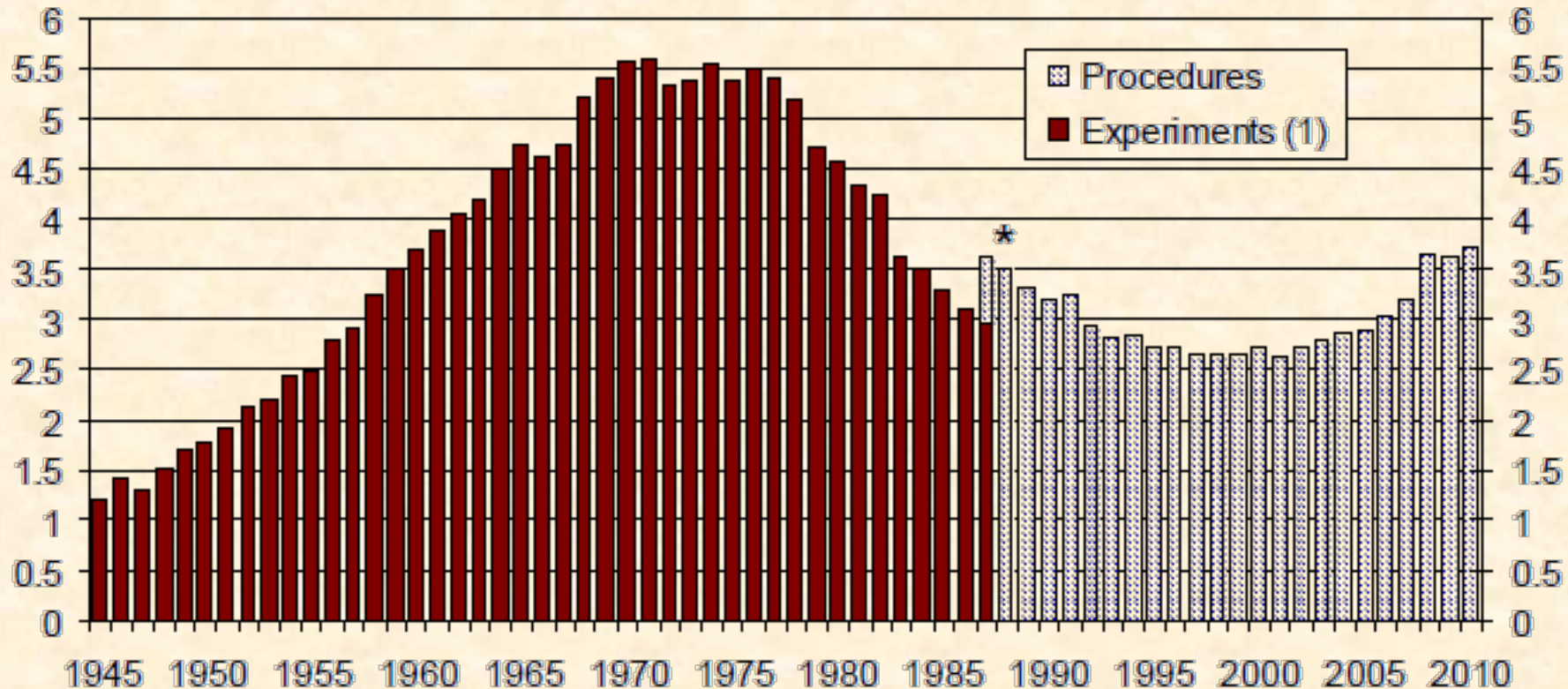
HALL'S 5 PRINCIPLES FOR ANIMAL STUDIES*

- 1) An experiment should not be performed if simple observations can provide required information***
- 2) No experiment should be done without a distinct and definite objective***
- 3) Experiments should not be needlessly repeated***
- 4) An experiment should be performed under such circumstances as will secure due observations and attestation of its results***
- 5) Experiments should be instituted with least possible infliction on the animal***

***M. Hall: A critical and experimental essay on circulation of the blood.
Sherwood, Gilbert & Piper, London 1831.
[Reprinted in *Lancet*, i: 58-60, 135,161 1847]**

Experiments or procedures commenced each year 1945-2010

Millions of procedures



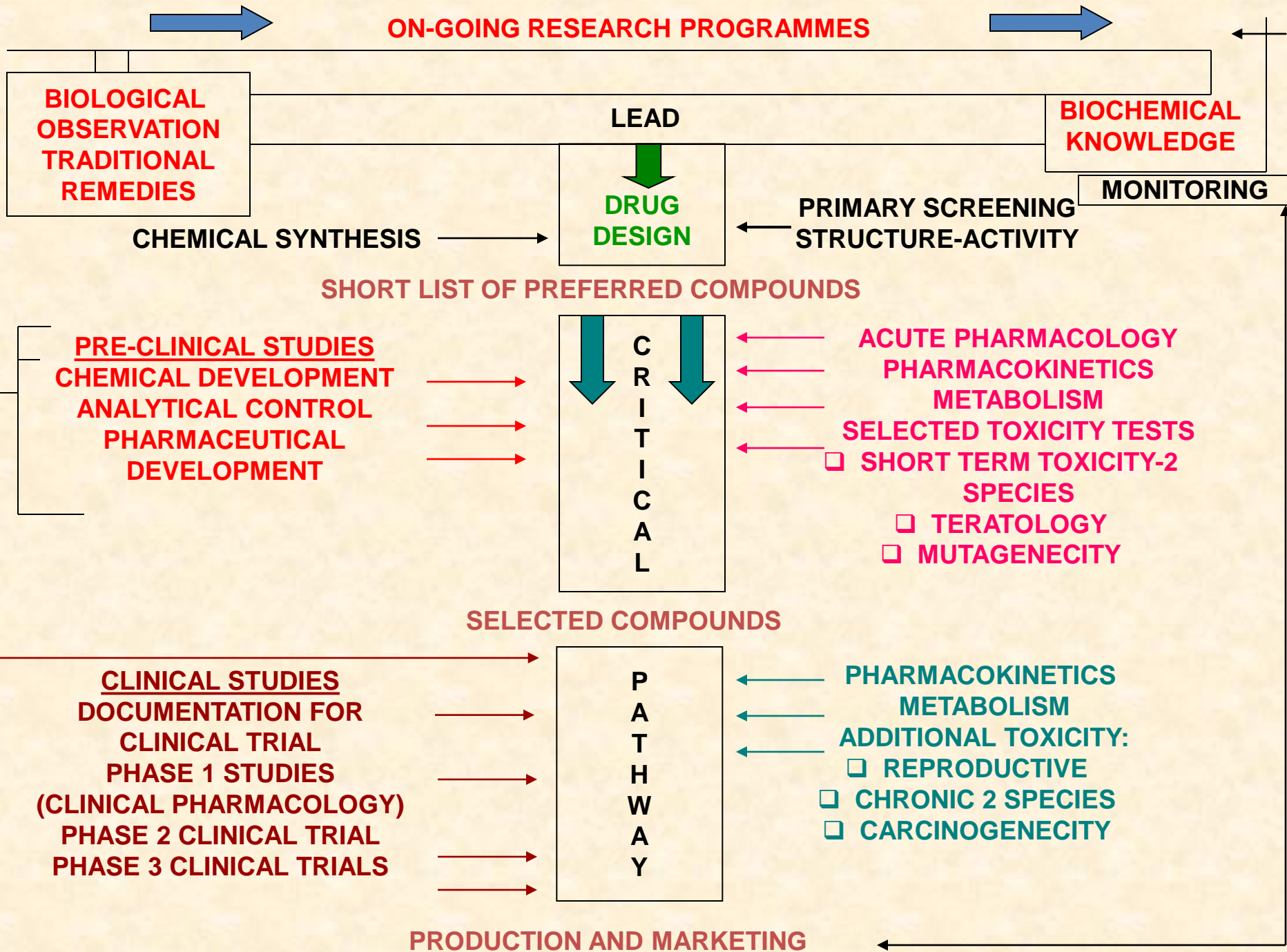
(1) Experiments under the 1876 Act or Scientific Procedures under the 1986 Act

* The 1987 total includes experiments under the 1876 Act as well as procedures under the 1986 Act

(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

Laboratory Animals Used at CDRI (2006-07 to 2010-11)

Species	2010-11	2009-10	2008-09	2007-08	2006-07
Mice	20261	17149	14907	18414	22549
Rat	15187	18770	17961	17504	19112
Hamster	6109	6110	4395	4865	4369
Mastomys	1014	983	788	1170	1355
Gerbil	600	510	533	910	632
Guinea Pig	179	74	125	376	458
Rabbit	137	135	128	75	247
TOTAL	43487	43731	38837	43314	48722



THREE PHASES OF NEW DRUG DEVELOPMENT

- **IDENTIFYING NEW CHEMICAL ENTITY(NCE)**

- Screening large library of compounds*
- Confirmation of activity *in vivo*
- Lead optimization to select best compound *

- **PRE-CLINICAL DEVELOPMENT**

- Activity (*on target system*) evaluation
 - Potency
 - Time course (*onset, duration*)
- Specificity (*effect on other organ systems*)
- Safety - Dose levels
 - **Regulatory toxicology**
 - Acute , sub acute, chronic
 - Mutagenicity*,Teratology,Carcinogenicity
- Drug interactions
- Mechanism of action*
- Pharmacokinetic data
 - Absorption, distribution & excretion
- Bio-transformation

- **CLINICAL STUDIES**

- Human subjects or Animals (*for veterinary products*)

*Possible to use *In-vitro, In-silico* procedures

Mandatory regulatory requirements determine species & number of animals in pre-clinical studies



What are laboratory Animals Used For?

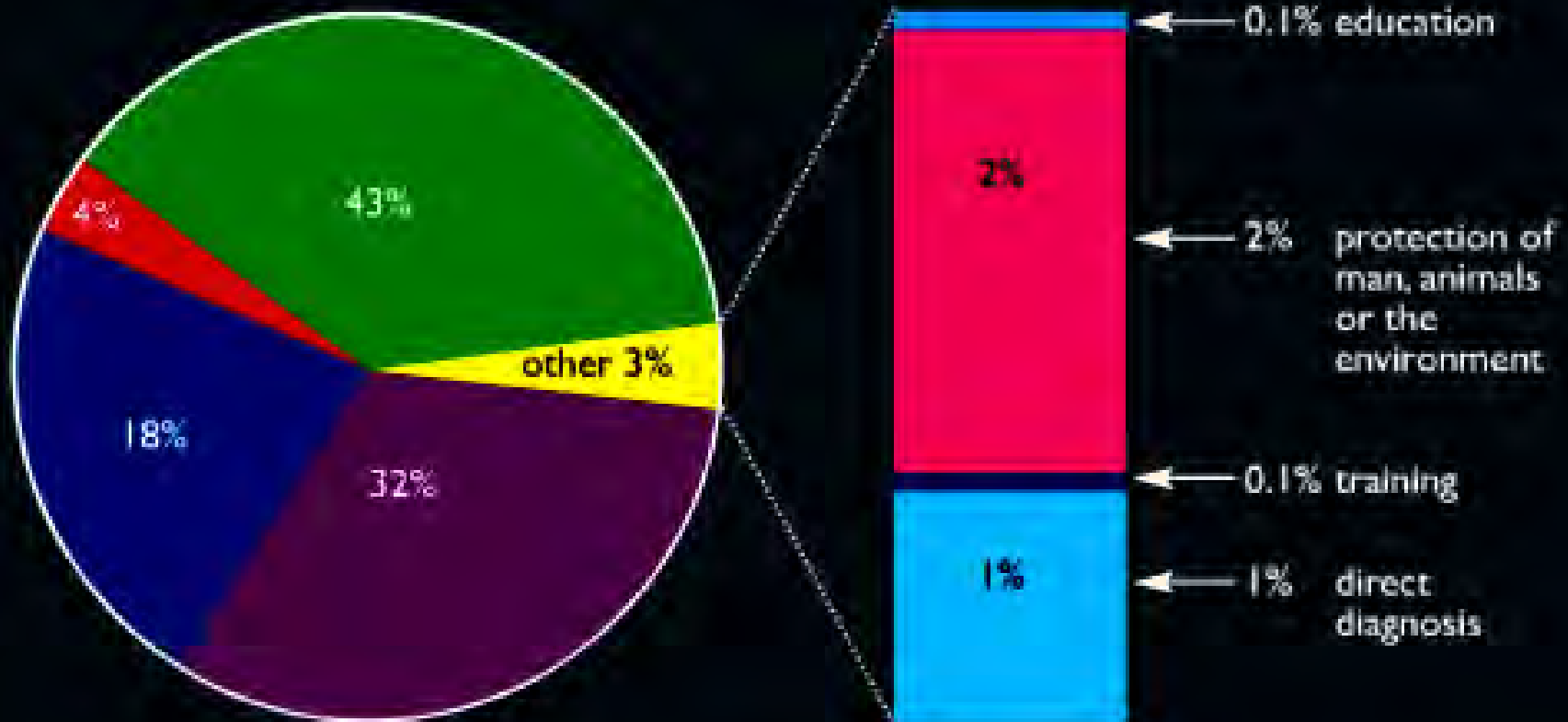
- 1) To improve basic knowledge of biological systems & to understand effect of disease on these systems(e.g. CNS)
- 2) To develop better ways of disease diagnosis
- 3) To develop new medical & surgical treatments for human & veterinary diseases
- 4) To produce new biological for disease prevention or treatment (e.g. vaccines)
- 5) To ensure safety & efficacy of drugs
- 6) To test xenobiotics etc. for human/ animal hazards



Some examples of medical advances through animal research benefitting both humans & animals

- 1) MEDICINES:** Antibiotics, Analgesics
- 2) VACCINES:** Polio, Rinderpest
- 3) SURGICAL PROCEDURES:** Transplant
- 4) MEDICAL TECHNOLOGY:** Life support machines

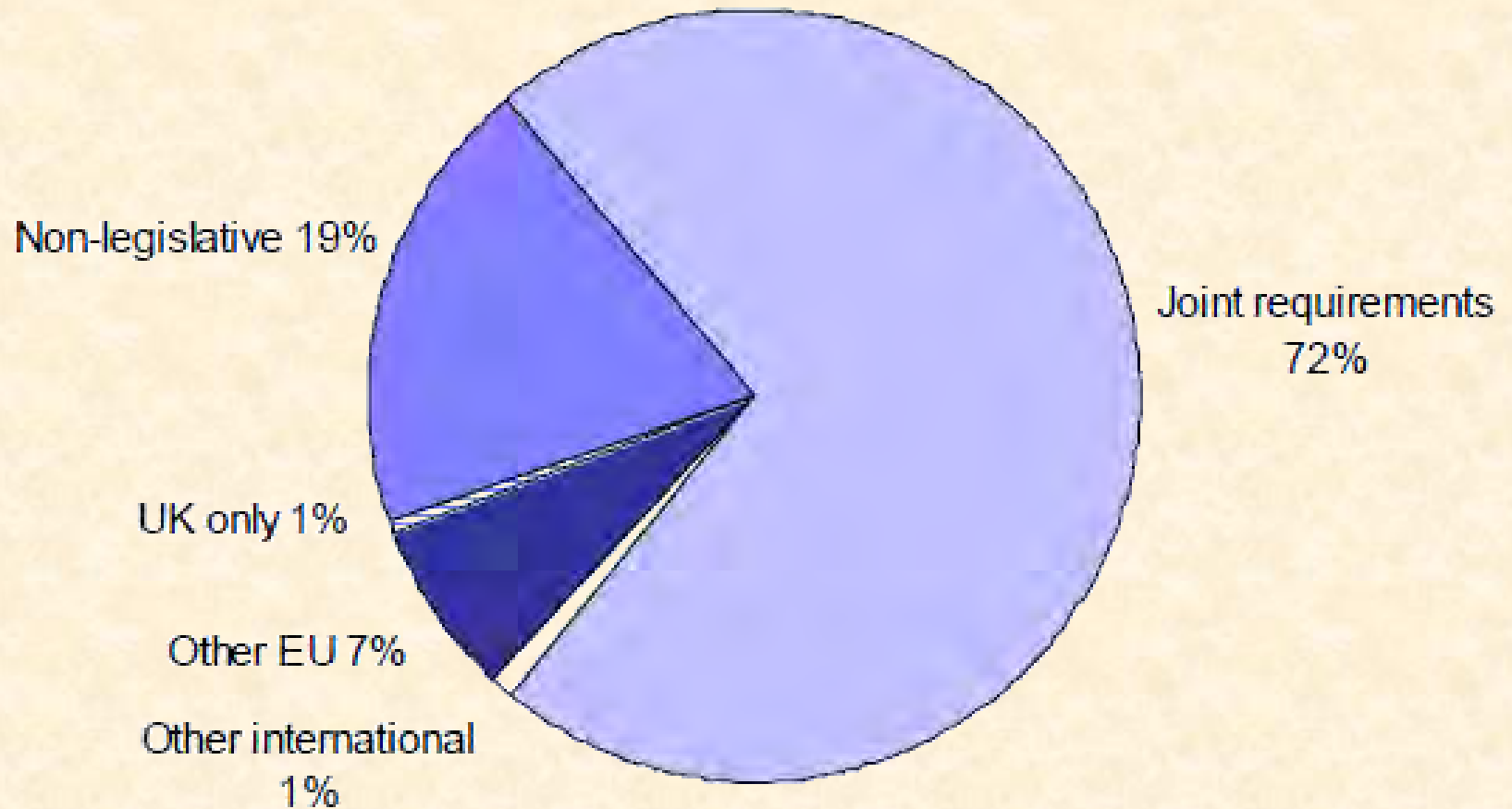
Primary purpose of experimental procedures on animals in Great Britain, 2009



■ = fundamental biological research; ■ = veterinary medicine; ■ = breeding;
■ = human medicine or dentistry.

(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

Procedures by legislative requirement (toxicology), 2010



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

% ANIMALS USED IN PHARMACEUTICAL RESEARCH IN GREAT BRITAIN DURING 2010

Animal Species	No. used	Pharmaceutical industry share (%)
Mouse	26,59,491	6.24
Rat	2,93,905	40.44
Guinea pig	13,586	39.37
Hamster	4,124	39.81
Gerbil	560	2.32
Rabbit	10,138	56.79
New world monkey	674	53.12
Old world monkey	1,975	86.89
Cat	152	44.08
Dog	4,454	79.32
Other species	5,73,234	0.42
Total	35,62,293	8.57

(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

“Those who unnecessarily harass and restrict it (animal research) now, will carry a grave responsibility for the unnecessary ignorance and unnecessary human and animal suffering that will result in the future.”

W.PATON

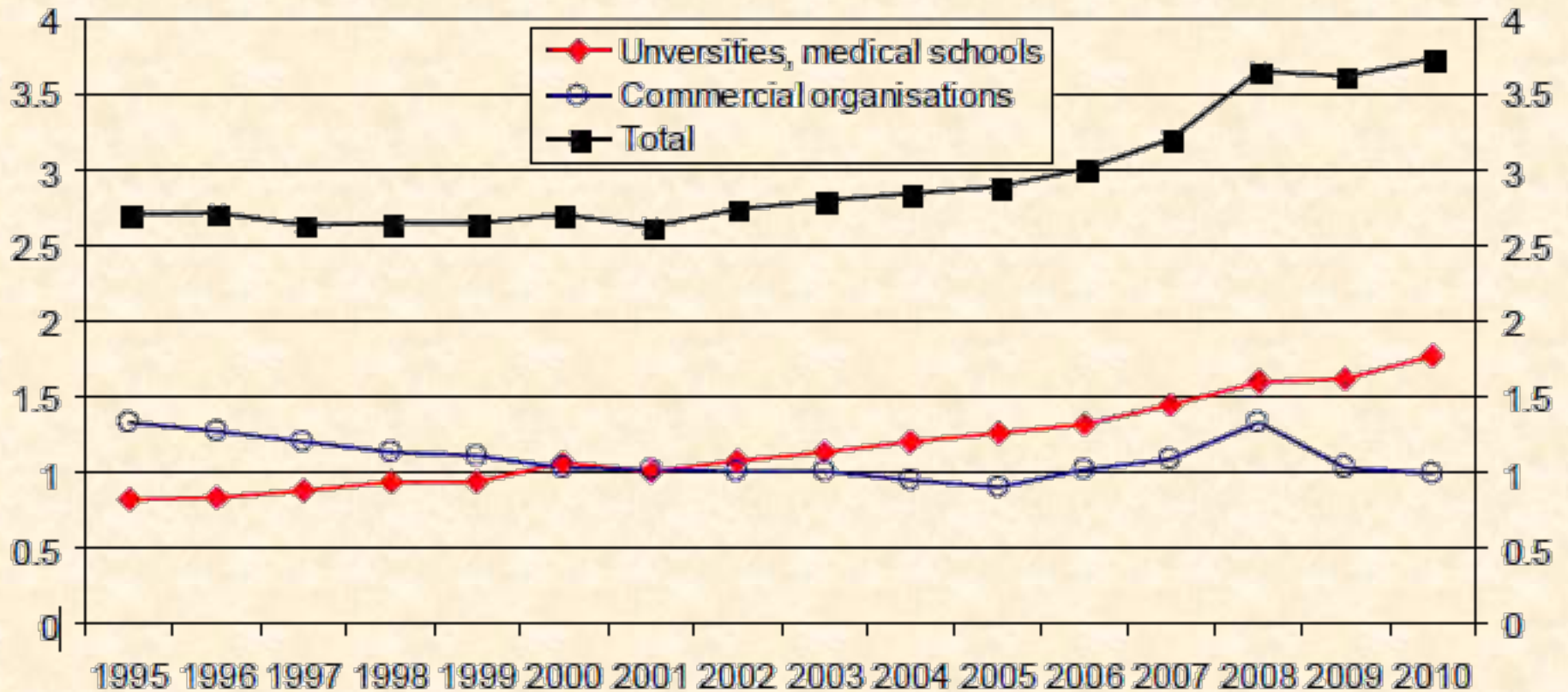
MAN AND MOUSE: ANIMALS IN MEDICAL RESEARCH
OXFORD UNIVERSITY PRESS ,LONDON ,1984



THANKS

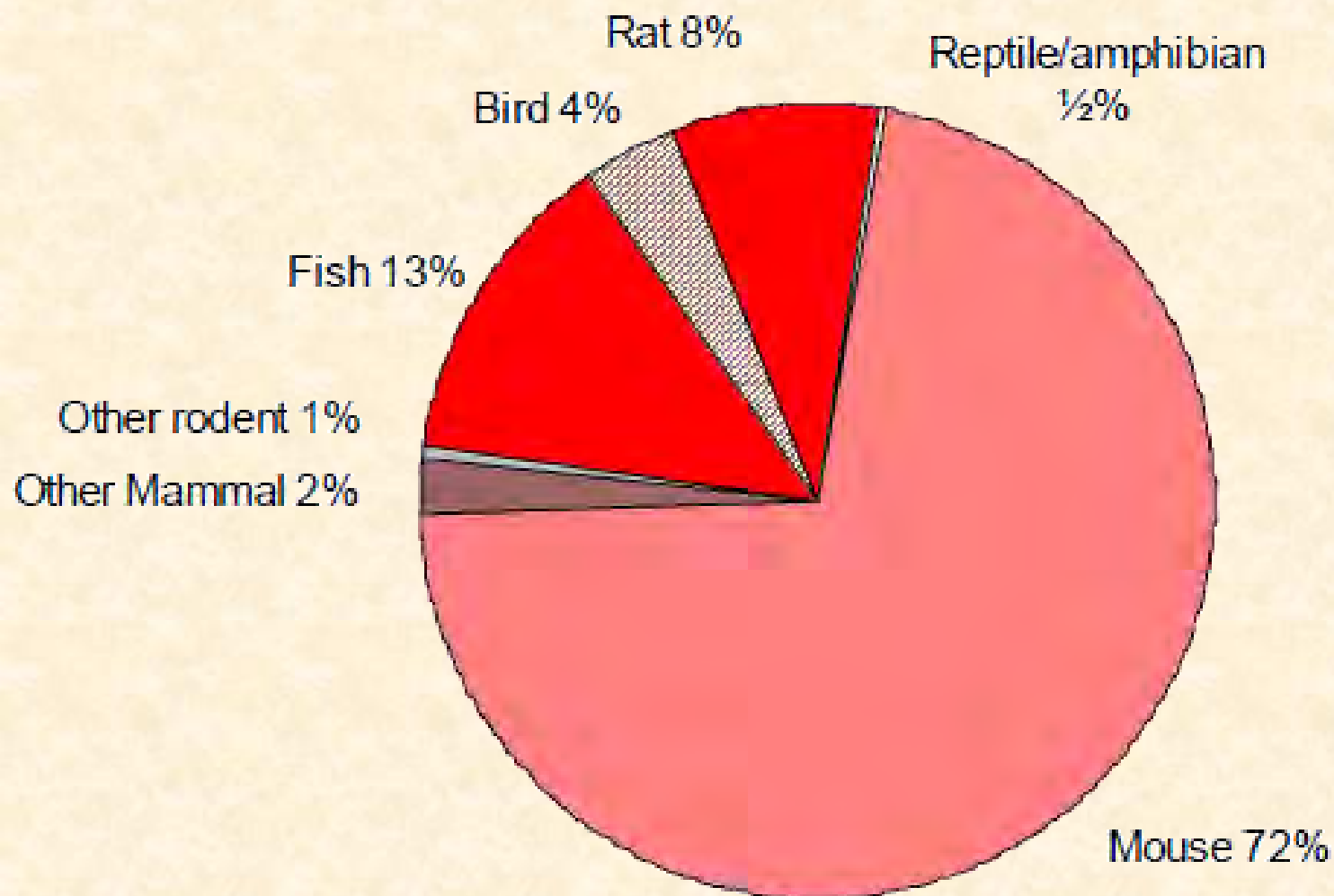
Procedures by establishment type 1995-2010

Millions of procedures



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

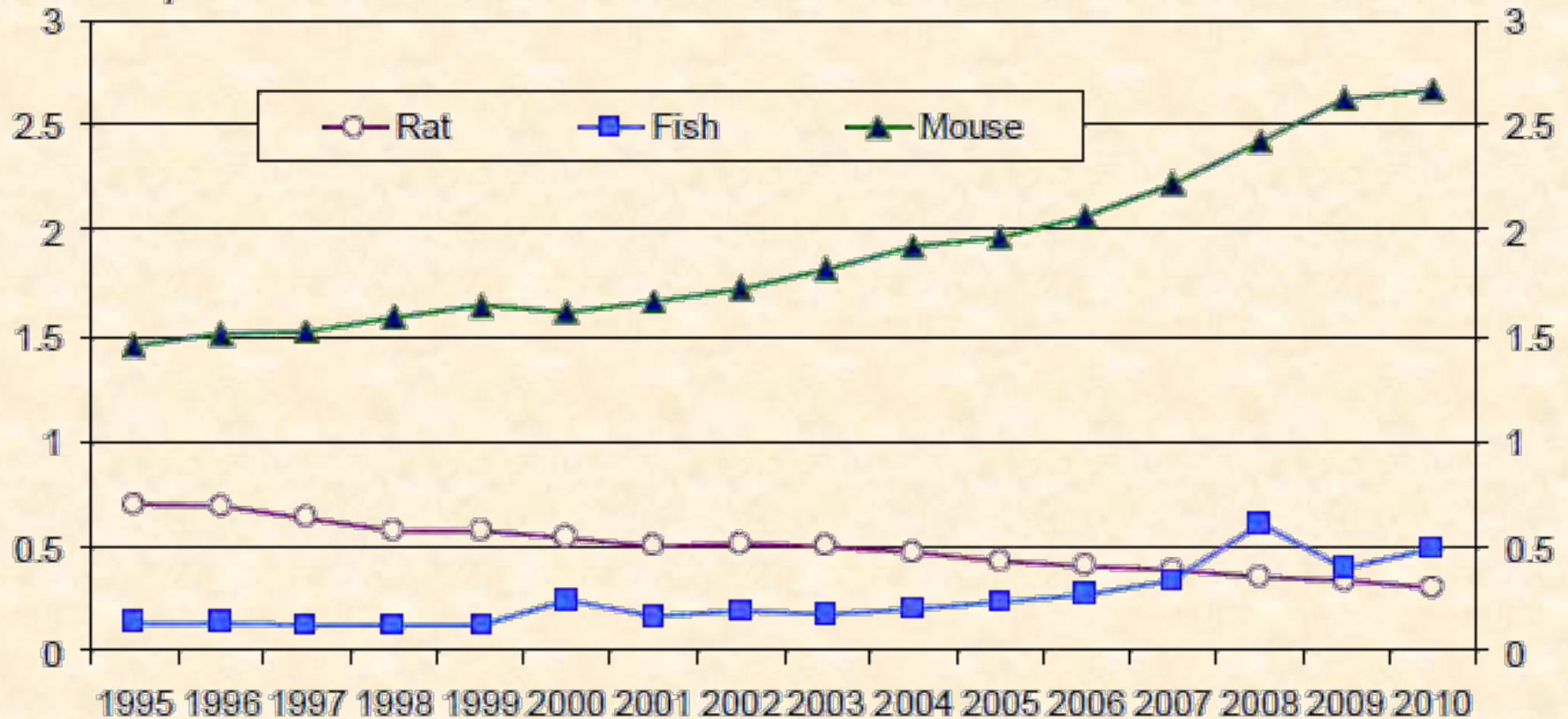
Procedures by species of animal, 2010



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

Procedures using mice, rats and fish 1995-2010

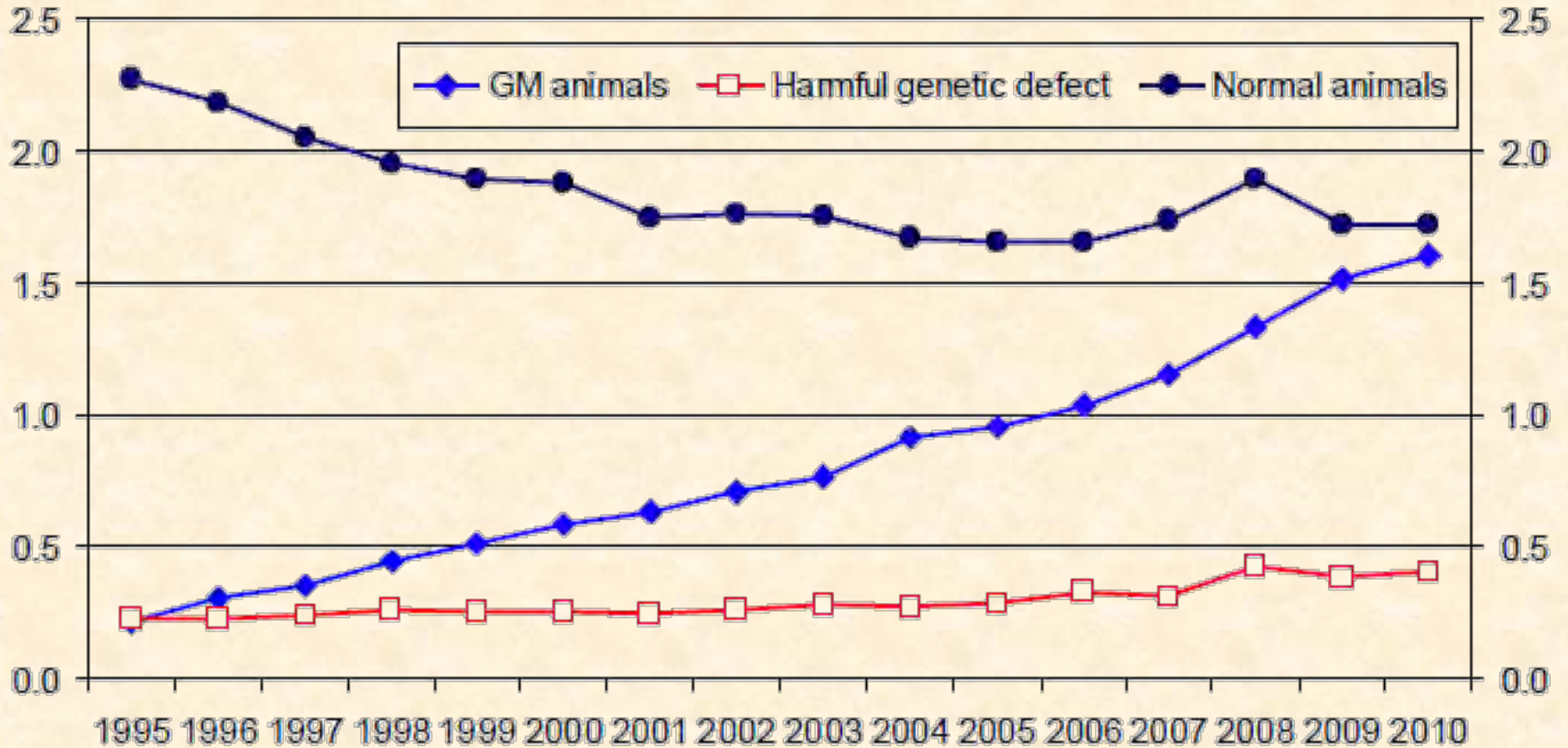
Millions of procedures



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

Procedures by genetic status of animal, 1995-2010

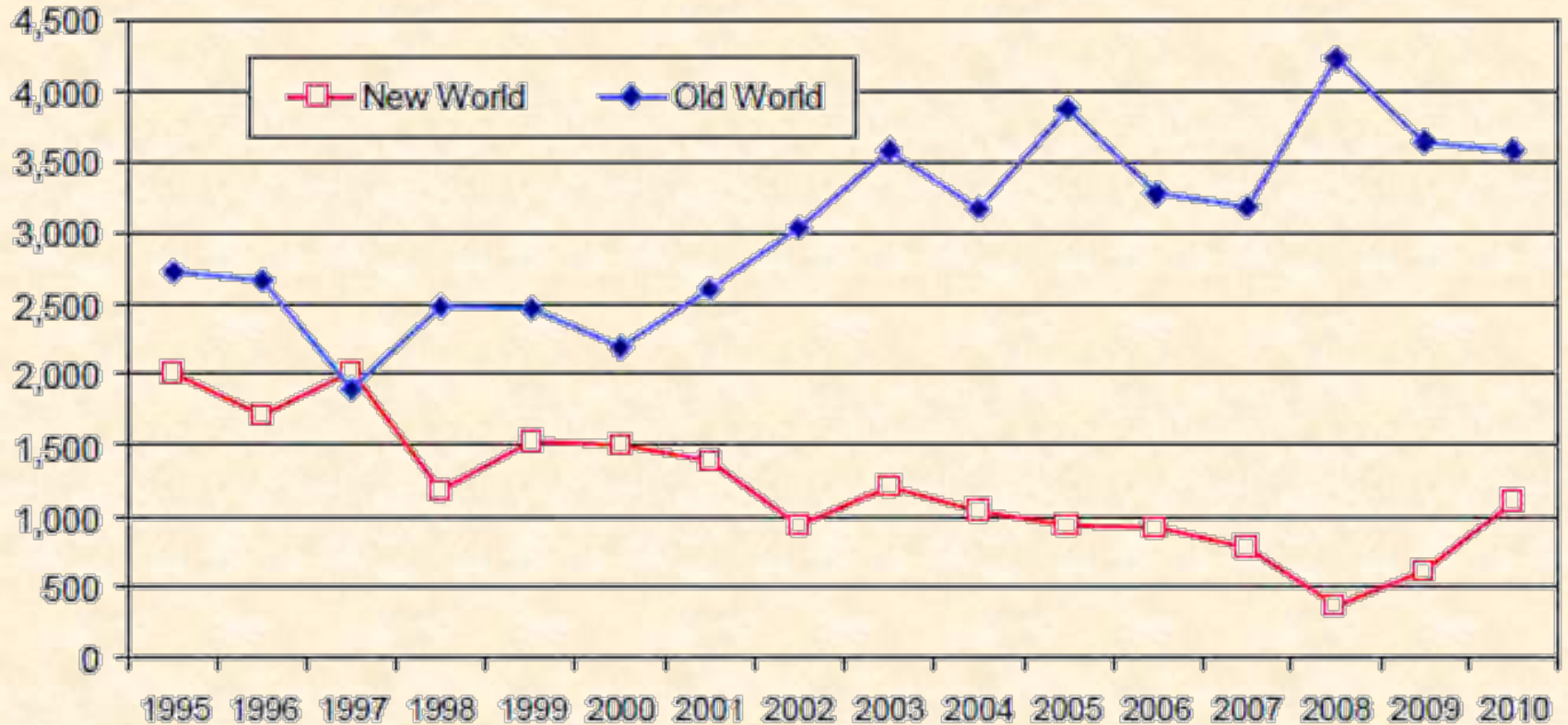
Millions of procedures



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)

Procedures using non-human primates, 1995-2010

Number of procedures



(Statistics of Scientific Procedures on Living Animal, Great Britain 2010)



Home Office

Statistics of Scientific Procedures on Living Animals Great Britain 2010

HC 1283
£10.25

