Mr. T. W. Barkley

WATS ON

Ref: J29/864.

C.

Extracts from recent issues of "Nature".

Dr. C.E.G. Smith.

DR. C.E.G. SMITH has been appointed director of the Microbiological Research Establishment, at Porton, Wiltshire, in succession to Dr. D.W.W. Henderson, as from August 1st. Dr. Smith is an honours graduate of the University of St. Andrews. After holding appointments in the Cumberland Infirmary, Carlisle, from 1947 until 1948, he joined H.M. Colonial Medical Service in 1948. He then held various appointments in Malaya, and while at the Institute of Medical Research at Kuala Lumpur, did research on virus diseases. In 1957 Dr. Smith was appointed senior lecturer in bacteriology at the London School of Hygiene and Tropical Medicine. In 1960 he became a member of the World Health Organization's study group on arthropod-borne viruses. Since 1961 Dr. Smith has been reader in virology in the University of London at the London School of Hygiene and Tropical Medicine. He is also head of the Arthropod-borne Virus Research Unit financed by the Department of Technical Co-operation.

Chelsea College of Science and Technology.

In accordance with the decision of the University Grants Committee, the Governing Body of Chelsea College of Science and Technology, with the approval of the Academic Advisory Committee, has an anticipation of the grant of University Status to the College conferred the title of professor on the following heads of Departments: Dr. A.H. Beckett (pharmacy), Dr. S.E. Dicker (physiology and pharmacology), Dr. J.F.J. Dippy (chemistry), Dr. K.W. Keohane (physics), Mr. A.E. Ludlam (mathematics), Dr. R.D. Purchon (botany and zoology). In addition, the title of reader has been conferred on Dr. W.E. Smith (geology).

University News:

East Anglia.

DR. D.C. CHAMPENEY, at present lecturer in physics in the University of Birmingham, has been appointed lecturer in physics at the University of East Anglia.

University News - Continued:

London

Dr. Jack Tizard, of the Social Psychiatry Research Unit of the Medical Research Council at the Institute of Psychiatry, has been appointed to the chair of child development at the Institute of Education. The following have been appointed to readerships: Dr. P.W.M. Jacobs (physical chemistry at Imperial College of Science and Technology); Dr. K.B. Roberts (physiology at the London Hospital Medical College); Dr. A.M. James (physical chemistry at Queen Elizabeth College); Dr. M.H. Quenouille (statistics at the Imperial College of Science and Technology); Dr. E.A. Ash (electrical engineering at University College). The following titles have been conferred: professor of paediatrics, on Dr. J.P.M. Tizard, in respect of his post at the Institute of Child Health; professor of social institutions, on Mr. O.R. McGregor, in respect of his post at Bedford College; reader in physics, on Dr. D.W.O. Heddle, Dr. C. Henderson and Dr. R.E. Jennings, in respect of their posts at University College; reader in biochemistry, on Dr. M.W. Neil, in respect of his post at the London Hospital Medical College; reader in human environment, on Dr. I.W. Cornwall, in respect of his post at the Institute of Archaeology.

Southampton

Prof. G.M. Lilley, professor of fluid dynamics at the College of Aeronautics, Cranfield, has been appointed to the chair of aeronautics and astronautics. Mr. P. Hammond, Fellow and director of studies in electrical sciences in Pembroke College, Cambridge, has been appointed to the chair of electrical power engineering. Dr. H.B. Griffiths, senior lecturer in mathematics in the University of Birmingham, has been appointed to the second chair of pure mathematics. Mr. J.H. Smith, lecturer in social science in the London School of Economics, has been appointed to the chair of sociology. Prof. E.J. Richards, professor of aeronautics in the University, has been appointed to the new chair of applied acoustics and the directorship of the Institute of Sound and Vibration Research. The following appointments in lectureships have been made: Dr. R.A. East (aeronautics and astronautics); Dr. R. Baker, Dr. M.C. Flowers, Dr. N.B.H. Jonathan, Mr. J.M. Mellor and Dr. J.S. Wood (Chemistry); Dr. M.E. Barton and Dr. B.S. Smith (civil engineering); Mr. J.D.E. Beynon (electronics); Mr. E.W. Haddon (mathematics); Dr. J.G. McEwen (physics); Dr. A. Crowe (physiology and biochemistry); Dr. T. Priede and Mr. P.L. Tanner (sound and vibration research); Miss D.M. Shepherd (sociology and social studies).

Aberdeen

Dr. R.G. Smith and Dr. P.A. Orkin have been appointed to senior lectureships in engineering and natural history, respectively.

WATS ON

Aberdeen (continued)

Mr. J.H. Savage Blaxter has been appointed to a lectureship in natural history (zoology). Dr. D.A. Archer and Mr. B.J. van der Kamp have been appointed to research fellowships in chemistry and forestry, respectively.

Cambridge

The report of the head of the Department of Engineering University of Cambridge, Sir John Baker, for the year 1962-63, records a total of 926 students, an increase of 8 on the previous year, although the undergraduate entry decreased by 5 to 272 (Pp. 14 Cambridge: The University, 1964). Research students in residence numbered 111, almost double the number in 1957 and 14 more than in 1961-62, while 12 postgraduate students took the Course of Advanced Study in Engineering. The main development was that the Electrical Optics in Part 1 of the Tripos was held for the first time. Some notes are included on research in progress in applied thermodynamics and gas dynamics, control engineering, electricity, fluid dynamics and structures, and there is a list of 95 publications.

Liverpool

The following appointments to lectureships have been announced: D.W. Dickens (psychology); B. Selby (mathematical statistics); J.C. Wilkinson (numerical analysis); C.H. Taylor-Robinson (bacteriology); M.J.T. Peaston (clinical pharmacology); G. Hall (civil engineering); J.A. Rees (electrical engineering); J.W. Cleaver and Dr. R.P.N. Jones (mechanical engineering).

Sussex

Dr. F.G. Bailey, at present reader in Asian anthropology in the University of London, has been appointed professor of anthropology, with effect from October. Prof. J.F. Sutcliffe, at present professor of botany in the University of London, has been appointed professor of plant physiology. Dr. Marie Jahoda, at present head of the Department of Psychology and Social Science at Brunel College of Advanced Technology, has been appointed professor of social psychology. Dr. N.S. Sutherland, at present lecturer in experimental psychology in the University of Oxford, has been appointed professor of experimental psychology. Prof. J.C. West at present professor of electrical engineering at Queen's University of Belfast, has been appointed professor of engineering and dean of the school of applied sciences. Prof. R.W. Cahn, at present professor of materials technology in University College, Bangor, has been appointed professor of materials science. The last-mentioned five appointments take effect from 1965. Other appointments have been made as follows: Reader, Dr. M.F. Lappert (chemistry);

Dr. E.A. Barnard (biological sciences). Senior lecturer, Dr. G. Martelli (experimental physics); Dr. H.R. Post (philosophy of science). Lecturer, Mr. R.W. Bott, Mr. J.R. Hanson, Dr. J.B. Pedley and Dr. P. Simmons (chemistry); Dr. P.J. Bushel, Dr. J.A. Laurie, Dr. R.R. Laxton, Dr. W.Parry and Dr. Rutovitz (mathematics); Dr. M. Springford, Dr. J. Venables and Mr. A.J. Walton (experimental physics); Dr. N. Dombey and Dr. D.A. Goodings (theoretical physics); Dr. R.J. Cole (biological sciences).

Experimental Physics in the University of Liverpool:

Prof. L.L. Green

Dr. L.L. Green, reader in the Department of Physics, has been appointed to the newly established chair of experimental physics in the University of Liverpool. Dr. Green was educated at Alderman Newton's School, Leicester, and at King's College, Cambridge, where he graduated B.A. in the Natural Sciences Tripos in 1944 and gained a Ph.D. in 1948. From 1944 until 1946 he was employed by the Department of Tube Alloys at the Cavendish Laboratory, Cambridge, where from 1946 until 1948 he held a Department of Scientific and Industrial Research research studentship. In 1948 he was appointed assistant lecturer at the University of Liverpool and later held the posts of lecturer, senior lecturer and reader. Dr. Green has lectured on nuclear reactions at conferences organized by the Physical Society and the Argonne National Laboratory and the Universities of Yale, Pennsylvania and Strasbourg. His published work has been mainly concerned with nuclear structure physics. Dr. Green will take up his duties on October 1.

Theoretical Physics in the University of Hull:

Prof. G.H.A. Cole

Dr. G.H.A. Cole has been appointed to the newly established chair of theoretical physics in the University of Hull. Dr. Cole is thirty-six years of age and graduated at University College, London, with first-class honours in physics in 1949. He obtained his Ph.D. in Queen Mary College, London, in 1952, and the D.Sc. of the University of London in 1963. For a time he was a scientific officer in the Royal Naval Scientific Service and then returned to take up an Imperial Chemical Industries fellowship in University College, London. He left there in 1957 to take up a visiting assistant professorship in the University of California for a year. Since then he has held the appointment of senior theoretical physicist and executive of Clarke, Chapman and Co., Ltd., marine, mechanical and electrical engineers, of Gateshead, Co. Durham. Dr. Cole's major interests have been in the fields of fluid dynamics, statistical mechanics of equilibrium and non-equilibrium fluids and of plasmas.

WATS ON

Physical Metallurgy in the University of Liverpool:

Prof. D. Hull

Dr. D. Hull, senior lecturer in the Department of Metallurgy in the University of Liverpool, has been appointed to the newly established chair of physical metallurgy. Dr. Hull, who is thirty-three years of age, was educated at Baines Grammar School, Poulton-le-Fylde, and at University College, Cardiff, where he was awarded the degree of B.Sc. with first-class honours in metallurgy in 1953, and the degree of Ph.D. in 1956. In 1954 he was awarded a Student's Essay Prize of the Institute of Metals, and in 1955 the second prize in the British Association for the Advancement of Science Endeavour Competition. During the period 1956-60 he was employed in the Metallurgy Division of the Atomic Energy Research Establishment at Harwell and the Clarendon Laboratory, University of Oxford, being appointed scientific officer in 1956, and senior scientific officer and section leader in 1958. From 1959 until 1960 he was secretary of the Basic Properties Committee of the Inter-Services Metallurgical Research Council. He was appointed lecturer in metallurgy at the University of Liverpool in 1960 and senior lecturer in 1961. He has been a member of the Basic Properties Committee of the Inter-Services Metallurgical Research Council since 1961. He has acted as consultant to Manlabs, Cambridge, Massachusetts, to the Atomic Energy Authority and to the International Research and Development Co., Ltd.

New University at Stirling, Scotland.

On the advice of the University Grants Committee, the Government has agreed to establish a new Scottish University at Stirling. The side recommended by the University Grants Committee is the Airthrey Estate, which is at present owned by the Scottish Home and Health Department. The preliminary steps for planning the new University will begin at once and the University Grants Committee will be in close consultation with the sponsoring Committee at Stirling. The target for student numbers recommended by the Robbins Committee for 1967-68 will be met by expansion of the existing Universities. The object will therefore be that the new University should be planned so as to enable it to make a growing contribution to the need for University places in the latter half of the ten-year programme envisaged by the Robbins Committee. Stirling will be the eighth new University foundation to be established in Great Britain in the past five years. In recent weeks, also, the Royal College of Science and Technology at Glasgow have been granted a charter and has become the University of Strathelyde. The new University at Stirling will therefore be the sixth in Scotland.

WATS ON

University News:

Belfast

The following appointments to lectureships have been announced: Dr. M.G. Burnett (physical chemistry (supernumerary)); K.G. Proudfoot (plant genetics); Dr. R.M. Pengelly (applied mathematics (digital computing)); Dr. D.L. Smith (botany).

Birmingham

The following appointments have been made: Lectureships, Mr. B.Ahamad (econometrics and social statistics); Dr. N. Cottingham (mathematical physics); Mr. B.D. Giles (meteorology and climatology); Dr. L.A. Griffiths (physiological chemistry); Mr. E. Stones (educational psychology). Research Fellowships, Mr. A. Ball (physical metallurgy); Mr. P.F. Barker (geology); Mr. J.H. Croft (genetics); Mr. D.J. Dunn (electronic and electrical engineering); Mr. A.G. Fraser (geology); Mr. J.G. Gardiner (Racal Research Fellow in the Department of Electronic and Electrical Engineering); Mr. N.L. Hancox (physics); Mr. W.J. Harvey (pure mathematics); Mr. G.E. Hollox (physical metallurgy); Dr. B.R. Pollard (mathematical physics); Mr. A. Pramnik (Imperial Chemical Industries Research Fellow in the Department of Electronic and Electrical Engineering).

Bristol

Dr. W. Chester, reader in applied mathematics, has been appointed to a chair of applied mathematics. Dr. H.E. Hinton, reader in entomology, has been appointed to the chair of entomology; Dr. F. Coles Phillips, reader in petrology, has been appointed to the chair of mineralogy and petrology. The following appointments to lectureships have been made: Mr. J.B. Bowes (anaesthetics); Dr. J.B. Chappell (biochemistry); Mr. P.B. Garland (biochemistry); Mr. E.M. McKay (electrical engineering); Mr. H.I.H. Saravanamutto (mechanical engineering); Dr. K.A. Upton (civil engineering); Dr. J. Wilks (education).

Edinburgh

The following have been appointed to lectureships: Dr. M.D. Wynne (chemical engineering); Mr. D.I. Campbell (education); Mr. H. Hastie (veterinary practice).

Newcastle-upon-Tyne.

The Rev. Dr. E.E. Aynsley has been appointed to a professorship in chemistry. Other appointments are as follows: Readerships, Dr. R.J.T. Pennington (neurochemistry in the Department of Clinical Biochemistry);

Dr. M. Fleischmann (physical chemistry); Dr. F.J. McQuillan (organic chemistry). Lecturers, N. Laws (applied mathematics); Dr. A.M. Mearns (chemical engineering). Dr. Mary Richardson has been reappointed Junior Luccock Research Fellow in the Department of Physiology for a further year.

Sheffield

The title of reader has been conferred on Mr. I.S. Maxwell (historical geography) and Mr. J. Crangle (physics). The following appointments have been made: Lectureships, Mr. J.F. Archer (bacteriology); Mr. D.J. Goldstein (human biology and anatomy); Mr. D.P. Rose (chemical pathology). Research Fellowships, Dr. K.H. Swinden (metallurgy).

Physics in the University of Manchester:

Prof. J.C. Willmott

Dr. J.C. Willmott, reader in physics in the University of Liverpool, has been appointed professor of physics in the University of Manchester, from a date to be arranged, in succession to Prof. E.B. Paul (Nature, 189, 876; 1961). Dr. Willmott was an undergraduate in the Imperial College of Science and Technology, obtaining a B.Sc. in 1942, with first-class honours in physics, and becoming an associate of the Royal College of Science in the same year. He then completed his military service, from 1942 until 1946, as a regimental officer in the Royal Electrical and Mechanical Engineers before commencing two years postgraduate study at the Imperial College of Science and Technology on infra-red spectroscopy, for which he was awarded a Ph.D. in June 1949. Dr. Willmott joined the academic staff of the University of Liverpool in 1948 as an assistant lecturer in physics, being promoted to lecturer in 1950, to senior lecturer in 1958 and to reader in 1963.

Physiology in the University of Birmingham:

Prof. S.M. Hilton

Dr. S.M. Hilton has been appointed to the Bowman chair of physiology in succession to Prof. I. Bush. Dr. Hilton will take up his appointment on January, 1st 1965. Dr. Hilton is a member of the scientific staff of the Medical Research Council, and has been in the Division of Physiology and Pharmacology at the National Institute for Medical Research since 1952. Dr. Hilton was born in 1921; he was a senior scholar at St. Paul's School, London, and from there he won an Exhibition to Jesus College, Cambridge. He completed part 1 of the National Sciences Tripos in 1941, and Part 11 in 1948. He took the degrees of M.B., B.Chir. in 1944, and Ph.D. in 1956. After qualifying in medicine he held various house appointments at Guy's Hospital and was resident medical officer at Preston Hall Hospital, near Maidstone. His period of national service was spent at the Royal Air Force Institute of Aviation Medicine, during which time he was also a

research assistant in the Department of Physiology at the Royal College of Surgeons. In 1950, after leaving the Royal Air Force, he worked for two years in the Department of Physiology at Cambridge and was in receipt of a personal grant from the Medical Research Council. Dr. Hilton's main field of research has been the circulatory system, with particular regard to mechanism of the changes in blood flow occurring in organs and tissues during activity. Recently he turned from the investigation of local chemical and nervous factors involved in such reactions to that of their regulation by the central nervous system, and the integration of cardiovascular responses in the behaviour and physical activity of the conscious animal.

Medical Research Council New Research Unit and Research Groups:

The Medical Research Council has recently announced the establishment of a new research unit and of three new research groups: The Cell Genetics Research Unit will be set up in the Department of Genetics in the University of Glasgow, under the honorary direction of Prof. G. Pontecorvo. The Unit will undertake research on the use of human and other mammalian cell cultures as a tool in genetic analysis. The Oculogenital Virus Research Group has been established at the Institute of Ophthalmology, University of London, under the honorary direction of Prof. B.R. Jones. The group will be engaged on research on the Trachoma-inclusion conjunctivitis agents, with particular reference to the relationship between infections of the genital tract and infections of the eye. The Research Group In Basic Immunology has been set up in the Department of Experimental Pathology, University of Birmingham Medical School, under the honorary direction of Prof. P.G.H. Gell. The Group will be mainly concerned with fundamental research in immunology and immunogenetics, with particular reference to the activities of cells in mediating immune responses. The Thrombosis Research Group will be established at the Institute of Basic Medical Sciences, the Royal College of Surgeons, under the honorary direction of Prof. G.V.R. Born. The Group will be concerned with Research into chemical substances which promote or prevent the adhesion and aggregation of platelets in the blood and affect the formation of thrombi.

WATS ON

Ref: J30/864

C.

As a result of new prices recently announced for Vickers instruments, the table of student microscopes issued with an earlier edition of Wats On has been revised and a current table is attached. Some alterations have been made in the listing of a complete outfit as it is generally felt today that most student microscopes are now supplied with a mains lamp unit rather than a mirror. It is interesting to note that apart from the Zeiss Standard Junior Microscope where the price does, of course, include Import Duty, the most expensive model is the Service 68. It is worth noting also that with the exception of the Watson Service 68 and the Watson Service 3, all other models listed have stage focusing by means of co-axial coarse and fine adjustment knobs.

Also included in this months issue is a comparison of routine binocular microscopes and this has been confined to those manufactured in this country. It is hoped to be able to add at a later date, continental models and your help in supplying current price lists of Leitz, Zeiss and Wild models would enable these to be included.

It is hoped to be able to include in the next edition of Wats On a survey of Stereoscopic Microscopes.

ROUTINE BINOCULAR MICROSCOPES — MAKE / MODEL / PRICE LIST	WATSON BACTIL-60 Feb. 64	WATSON BACTIL FEB. 64	WATSON SERVICE 3 FEB.64	VICKERS PATHOLETTE II JULY 64	VICKERS M15B JULY 64	BECK DIAMAX JAN. 64	G. & S. LABLYNX APRIL 64	G. & S. LYNX APRIL 64
Stand with focusing substage	94. 0. 0.	71. 0. 0.	70. 10. 0.	64. 10. 0.	61. 6. 0.	58. 10. 0.	135. 18. 6.	41. 7. 0.
Built-in mechanical stage	38. 0. 0.	38. 0. 0.	with stand	with stand	with stand	with stand	with stand	25. 12. 6.
Inclined binocular body (rotatable)	47. 0. 0. (reversible)	42. 0. 0. (fixed)	37. 10. 0.	28. 0. 0.	28. 0. 0.	32. 18. 0.	with stand	38. 0. 0.
4 x nosepiece	4. 4. 0.	4. 4. 0.	4. 4. 0.	with stand	with stand	with stand	with stand	with stand
x 4 Achro. objective	3. 14. 0.	3. 14. 0.	3. 14. 0.	2. 14. 0.	2. 14. 0.	4. 6. 0.	3. 0. 0.	3. 0. 0.
x 10 Achro. objective	4. 10. 0.	4. 10. 0.	4. 10. 0.	4. 10. 0.	4. 10. 0.	3. 16. 0.	5. 0. 0.	5. 0. 0.
x 40 Achro. objective	8. 0. 0.	8. 0. 0.	8. 0. 0.	7. 12. 0.	7. 12. 0.	8. 18. 0.	7. 0. 0.	7. 0. 0.
x 100 Achro. objective	15. 0. 0.	15. 0. 0.	15. 0. 0.	11. 8. 0.	11. 8. 0.	18. 10. 0.	13. 15. 0.	13. 15. 0.
Pair x 6/7 eyepieces	3. 8. 0.	3. 8. 0.	3. 8. 0.	3. 14. 0.	3. 14. 0.	4. 0. 0.	3. 0. 0.	3. 0. 0.
Pair x 10 eyepieces	3. 8. 0.	3. 8. 0.	3. 8. 0.	3. 14. 0.	3. 14. 0.	4. 0. 0.	3. 0. 0.	3. 0. 0.
Achromatic condenser in centring iris mount	19. 14. 0.	19. 14. 0.	19. 14. 0.	21. 16. 0.	21. 16. 0.	18. 18. 0.	18. 3. 0.	18. 3. 0.
6v. Kohler illuminator and control unit	33. 0. 0.	39. 6. 0.	7. 0. 0. (not Kohler)	27. 16. 0.	31. 18. 0.	30. 2. 0.	with stand	6. 17. 0. (not Kohler)
Wooden Case.	with stand	with stand	with stand	6. 0. 0.	6. 0. 0.	3. 18. 0.	5. 10. 0.	3. 19. 0.
TOTAL:	273. 18. 0.	252. 4. 0.	176. 18. 0.	181. 14. 0.	182. 12. 0.	187. 16. 0.	194. 6. 6.	168. 13. 6.
x 10 Fluorite objective	8. 15. 0.	8. 15. 0.	8. 15. 0.	-	-	-	-	-
x 50 Fluorite objective	25. 10. 0.	25. 10. 0.	25. 10. 0.	35. 16. 0.	35. 16. 0.	30. 10. 0.	27. 0. 0.	27. 0. 0.
x 90/100 Fluorite objective	38. 0. 0.	38. 0. 0.	38. 0. 0.	31. 12. 0.	31. 12. 0.	-	28. 0. 0.	28. 0. 0.
Pair x 10 Compensating eyepieces	8. 0. 0.	8. 0. 0.	8. 0. 0.	7. 2. 0.	7. 2. 0.	9. 10. 0.	8. 0. 0.	8. 0. 0.

STUDENT MICROSCOPES — NAME – MODEL – PRICE LIST –	VICKERS PATHOLETTE II JULY 64	VICKERS M15B JULY 64	BECK DIAMAX JAN.64	G & S LYNX APRIL 64	WATSON SERVICE 68 FEB 64	WATSON SERVICE 3 FEB. 64	PRIOR SOLITAIRE NOV. 63	ZEISS STANDARD JUNIOR FEB. 64
Stand with focusing substage	37. 10. 0.	36. 14. 0.	34. 8. 0.	30. 7. 0.	40. 0. 0.	31. 10. 0.	37. 10. 0.	40. 18. 0.
Plain stage	with stand	with stand	with stand	with stand	with stand	with stand	with stand	with stand
4 x nosepiece	with stand	with stand	with stand	with stand	4. 4. 0.	4. 4. 0.	with stand	with stand
Inclined Monocular head	5. 2. 0.	4. 8. 0.	5. 14. 0.	7. 0. 0.	Inclination joint	5. 0. 0.	with stand	11. 15. 0.
16mm. Achro. objective x 10	4. 10. 0.	4. 10. 0.	3. 16. 0.	5. 0. 0.	4. 10. 0.	4. 10. 0.	3. 6. 0.	10. 0. 0.
4mm. Achro. objective x 40	7. 12. 0.	7. 12. 0.	8. 18. 0.	7. 0. 0.	8. 0. 0.	8. 0. 0.	7. 10. 0.	16. 1. 0.
x 6 eyepiece	1. 14. 0.	1. 14. 0.	2. 0. 0.	1. 10. 0.	1. 14. 0.	1. 14. 0.	1. 12. 0.	3. 9. 0.
x 10 eyepiece	1. 14. 0.	1. 14. 0.	2. 0. 0.	1. 10. 0.	1. 14. 0.	1. 14. 0.	1. 12. 0.	3. 9. 0.
Abbe condenser in iris mount	4. 10. 0.	3. 8. 0.	3. 18. 0.	4. 15. 0.	5. 0. 0.	5. 0. 0.	4. 14. 0.	5. 5. 0.
Mains Lamp Unit	2. 14. 0.	4. 8. 0.	2. 8. 0.	1. 17. 6.	6. 16. 0.	3. 10. 0.	2. 10. 0.	4. 8. 0.
Dust Cover	6. 0.	6. 0.	–	8. 0.	with stand	with stand	–	18. 0.
TOTAL :	65. 12. 0.	64. 14. 0.	63. 2. 0.	59. 7. 6.	71. 18. 0.	65. 2. 0.	58. 14. 0.	96. 3. 0.
Mirror Unit	3. 6. 0.	3. 12. 0.	1. 4. 0.	1. 15. 6.	in above total	3. 0. 0.	2. 10. 0.	in above total
Wooden Case	6. 0. 0.	4. 0. 0.	3. 18. 0.	3. 19. 0.	in above total	3. 0. 0.	3. 0. 0.	8. 5. 0.
40mm. Achro. objective x 3/4	2. 14. 0.	2. 14. 0.	4. 6. 0.	3. 0. 0.	3. 14. 0.	3. 14. 0.	3. 6. 0.	9. 18. 0.
2mm. Achro. objective x 100	11. 8. 0.	11. 8. 0.	13. 2. 0.	13. 15. 0.	15. 0. 0.	15. 0. 0.	12. 0. 0.	27. 15. 0.
6v. Lamp Unit	27. 16. 0. (Kohler type)	15. 2. 0.	17. 18. 0.	6. 17. 0.	17. 10. 0.	10. 10. 0.	6. 8. 0.	23. 19. 0.
Binocular head	28. 0. 0.	28. 0. 0.	32. 18. 0.	38. 0. 0.	45. 0. 0.	37. 10. 0.	–	23. 14. 0.
Mechanical stage 75mm. x 25mm.	12. 8. 0.	12. 8. 0.	20. 10. 0.	13. 7. 0.	14. 10. 0. (50x25mm only)	18. 10. 0.	13. 14. 0.	64. 11. 0.

WATS ON

AUGUST, 1964.
Ref: TSM. No. 14
U.C.

INSTRUCTIONS FOR ADJUSTING WISE TO ASYMETRIC ZERO

1. Remove Cover. To remove the cover first unscrew the corrector lens tube and the eyepiece tube. The cover can now be lifted from the instrument. Replace both tubes without the cover.

2. Place the WISE, without cover, in a microscope and focus the dust on the surface of a slide by transmitted light using a low power objective.

3. Adjust the shear, by rotating the micrometer drum, to a scale reading of 020.0.

4. Locate the adjusting screw on the slide. It is an Allen screw which bears against the quadrant.

5. Screw IN the adjusting screw, observing the image, until the zero shear condition is reached.

6. The cover should finally be replaced.

NOTE: It is not recommended that the zero position should be set at a scale reading below 020 as the slide can then foul at the extremes of its travel.

To return the instrument to central zero set the micrometer drum for scale reading 050 and then UNSCREW the adjusting screw for zero shear.

WATS ON

AUGUST 1964

T. 15.

R.

GILLETT & SIBERT'S CONFERENCE MICROSCOPE FOR FLUORESCENCE MICROSCOPY

Many of our readers may have seen the full page advertisement for this equipment in "Nature" August 15th 1964. The Sales Department at Barnet are interested to know how successful fluorescence microscopy can be using a quartz-iodine source. Mr. Terrell would be grateful for any customers comments on this equipment or on any other fluorescence equipment using a similar source.

WATS ON

AUGUST, 1964.
T.S.M. No. 16
U.C.

NOTES ON THE USE OF COMPENSATING EYEPIECES WITH W.I.S.E.

1) The transverse colour aberration of high power objectives can affect the accuracy of measurements with the W.I.S.E. unless it is corrected with a Compensating eyepiece. When a W.I.S.E. with standard eyepiece is set to zero shear on a specimen using a high power objective there appears to be a small shear at the top and bottom of the field due entirely to the transverse colour of the objective.

2) Objectives requiring Compensating eyepieces are:

   a) all those with focal length less than 16mm.

   b) 16mm. Fluorite and Apo objectives.

3) The Compensating eyepiece should be either x 8 or x 10. Eyepieces with magnifications over x 10 are not satisfactory as the W.I.S.E. has a factor of x 2 making the x 10 equivalent to a x 20. If eyepieces of magnifications lower than x 8 are used there will be severe vignetting of the field by the W.I.S.E.

4) The W.I.S.E. should be calibrated with the eyepiece to be used for measurement, taking care to align it accurately to the stage micrometer - it will not be possible to use the graticule for this as it cannot be focused with the Compensating eyepiece. It has been found practical to align the body of the W.I.S.E. to the stage micrometer by eye to sufficient accuracy.

5) If a standard area is required for particle counting a graticule should be inserted in the Compensating eyepiece. It will not be well defined at the edges of the field owing to the field curvature of the eyelens but this will not matter for most of the applications envisaged for the W.I.S.E. as a large field is not required.

6) There is clearly a requirement for a special x 10 Compensating eyepiece of Ramsden form to focus the standard graticule in the W.I.S.E. It is not yet known if such an eyepiece is feasible - please do not expect one to be produced in the immediate future.

WATS ON

AUGUST 1964
T.S.M. No. 17
U.C.

ABSTRACT FROM A RECENT PUBLICATION

'R. & D.' No. 36, Aug./Sept. 1964.

Electrolytic Polishing for Metallography,
by R. Ironman.

Electrolytic polishing methods are fully described together with illustrations of commercial equipment. The method is compared critically with conventional polishing techniques.

WATS ON

TO: The Editor,
"WATS ON",
Barnet.

31.7.64.

Dear Sir,

GRATICULES & CALIBRATION

The last pre-war edition of the catalogue, the 35th. Edition, was made up in stiff cloth-bound covers, and, being so durable, there are still a number of copies in existance. This edition carried much information of interest and of use to customers. Page 17 carried useful tables of Total Magnifications for all the current objectives and eyepieces, also the size of the Field of View for each combination, and a column headed "Micrometric Value".

In view of the existance of copies of this catalogue, it may be that some of the younger members of the Sales staff may be asked, as I have often been asked, "What is the meaning of Micrometric Value"? I would, therefore, like to use the columns of WATS ON to make the following explanation which seems to have been lost in the mists of antiquity.

Micrometric Value is the value, in microns, of 1 eyepiece division of a standard linear eyepiece graticule when used in a x 6 Micrometer Eyepiece, at a tube-length of 160 mm. and when calibrated against a standard metric stage micrometer. This value varies with every objective, and the full list for all current objectives was given in the table.

A curious and interesting point is observable in the quoted Micrometric Values, which I have often confirmed with current objectives - and that is that the micrometric value, in microns, is very nearly the same figure as the focal length of the objective, in millimetres. This point is of some use when dealing with students and other beginners, for the figure can be used as a guide in calibration, at all events to prevent the misplacing of a decimal point, and similar gross errors. I do not know of any optical reason for this approximation, and I assume that it is merely a coincidence.

On the subject of graticules and catalogues, I have felt for a long time that the information given in catalogues of the actual values of graticule divisions and squares is both unnecessary and, in some cases, misleading. By the latter, I mean that beginners and, after all, there are bound to be beginners amongst customers, have, on occasion, tried to

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use the actual value of the graticules as a measuring unit, forgetting that this actual value bears no relationship to the real value when this has been ascertained by calibration against the stage micrometer.

This being so, I would suggest that the catalogues should describe the graticules in terms of just the number of lines or squares, with the figuring, if any, and then give some real meaning to them by the reintroduction of a table of "Micrometric Values" to comply with the above definition, for every current objective. If the table carried, in addition, the total magnification for every objective/eyepiece combination, and the accompanying "Field of View" diameter for each such combination, considerable useful information would thereby be offered.

Do any other readers agree with me ?

Yours faithfully,

J. D. Casartelli

Adrian Terrell replies:-

I have been prompted by Mr. Casartelli's letter in this edition to offer my own views on the question of eyepiece scale calibration and micrometric values. I hope other readers will also contribute their views so that we can select the best points from all and combine them into a T.S.M. on the subject.

First I must define some terms as their precise meaning can vary somewhat;

1) Objective Magnification is equal to the image size divided by the object size when the image is focused 160mm. (or the stated tube length) behind the R.M.S. shoulder.

2) Primary Magnification is equal to the primary image size divided by the object size. This is equal to the objective magnification multiplied first by a microscope factor and then by an eyepiece factor. The microscope factor depends on departure from the nominal tube length, on any magnification changer incorporated and on the factor of any binocular or inclining unit. The eyepiece factor is equal to one for a Ramsden eyepiece but has some value less than one in a Huygenian eyepiece or any other eyepiece where the image comes between the lenses. It is a measure of the amount by which the field lens reduces the primary magnification.

3) Objective Focal Length this is traditionally not a true focal length but a length defined as the nominal tube length divided by the objective magnification. It approximates to the optical focal length for high power objectives.

I agree that to publish magnification tables is a useful thing but feel that they should be confined to combinations of objective and eyepiece which are mutually suited. It should be realised that magnification tables have been complicated since the 35th edition by the fact that binocular heads with magnification factors have become popular. I do not agree that micrometric values are useful, because of their arbitrary nature they appertain only to a particular eyepiece and to a particular scale interval.

To calibrate an eyepiece scale of known interval (actual) with a stage micrometer is equivalent to determining the primary magnification. If the object of the micrometric values was to enable the calibration factor to be estimated, this can be done more logically and more universally by the following method:-

The calibration factor (F) measured in microns per division is equal to the scale interval (d) divided by the primary magnification (Mp),

$$\text{i.e.} \quad F = \frac{d}{Mp} \text{ microns/divisions} \qquad \text{(1)}$$

but the primary magnification (Mp) = the objective magnification (Mo) x the microscope factor (Cm) x eyepiece factor (Ce) so that,

$$F = \frac{d}{Mo \times Cm \times Ce} \qquad \text{(2)}$$

The example below shows how equation (2) can be used to estimate the calibration factor of a microscope without using micrometric values:

Example:	objective, 4mm. Para	:-	Mo = x 40
	eyepiece, x 10 Huygenian	:-	Ce = x 0.73 (say)
	microscope, Bactil-60 with bino head	:-	Cm = x 1.5
	scale, 1 cm. in 50 parts	:-	d = 50 microns

From equation (2)

$$F = \frac{50}{40 \times 1.5 \times 0.73} \simeq 1.14 \text{ microns/divisions.}$$

This scheme would involve listing a factor for each eyepiece but there are many less than objectives. It has the advantage of not being confined to any particular eyepiece or to any particular microscope

When we adjust the tube length of a monocular microscope to make the calibration factor a convenient whole number, it is sometimes useful to be able to estimate quickly how far to move the drawtube. A useful rule is that the objective magnification changes by unity when the tube length is altered by the focal length.

Example: if the calibration factor of an 8mm. (x 20 objective) is measured with a stage micrometer and found to be 6.1 microns per division at 160mm. tube length, how much should we extend the tube length to increase the magnification to get 5 microns per division?

Solution: we require to increase the magnification in the ratio

$$\frac{6.1}{5} = 1.22,$$

22% of x 20 is 4.4 so the drawtube must be extended 4.4 x 8mm. = 35mm.

I have frequently found this method useful.

The relationship between micrometric value and focal length mentioned by Mr. Casartelli can be anticipated from formula (2) above if we remember the definition of the objective focal length. The micrometric value is a special case of the calibration factor, i.e. when the scale interval is 100 microns and the eyepiece is a Watson x 6 Huygenian. We therefore have:-

$$\text{micrometric value} = \frac{100}{\text{objective magnification} \times 0.7}$$

$$\text{from the definition of objective focal length} = \frac{100}{160 \times 0.7} \times \text{focal length}$$

$$\simeq 0.9 \times \text{focal length}$$