



Origins of the Reporting Radiographer

Paul Lockwood

*25th Congress of The British Society for the History of Medicine
Canterbury 30th August 2013*



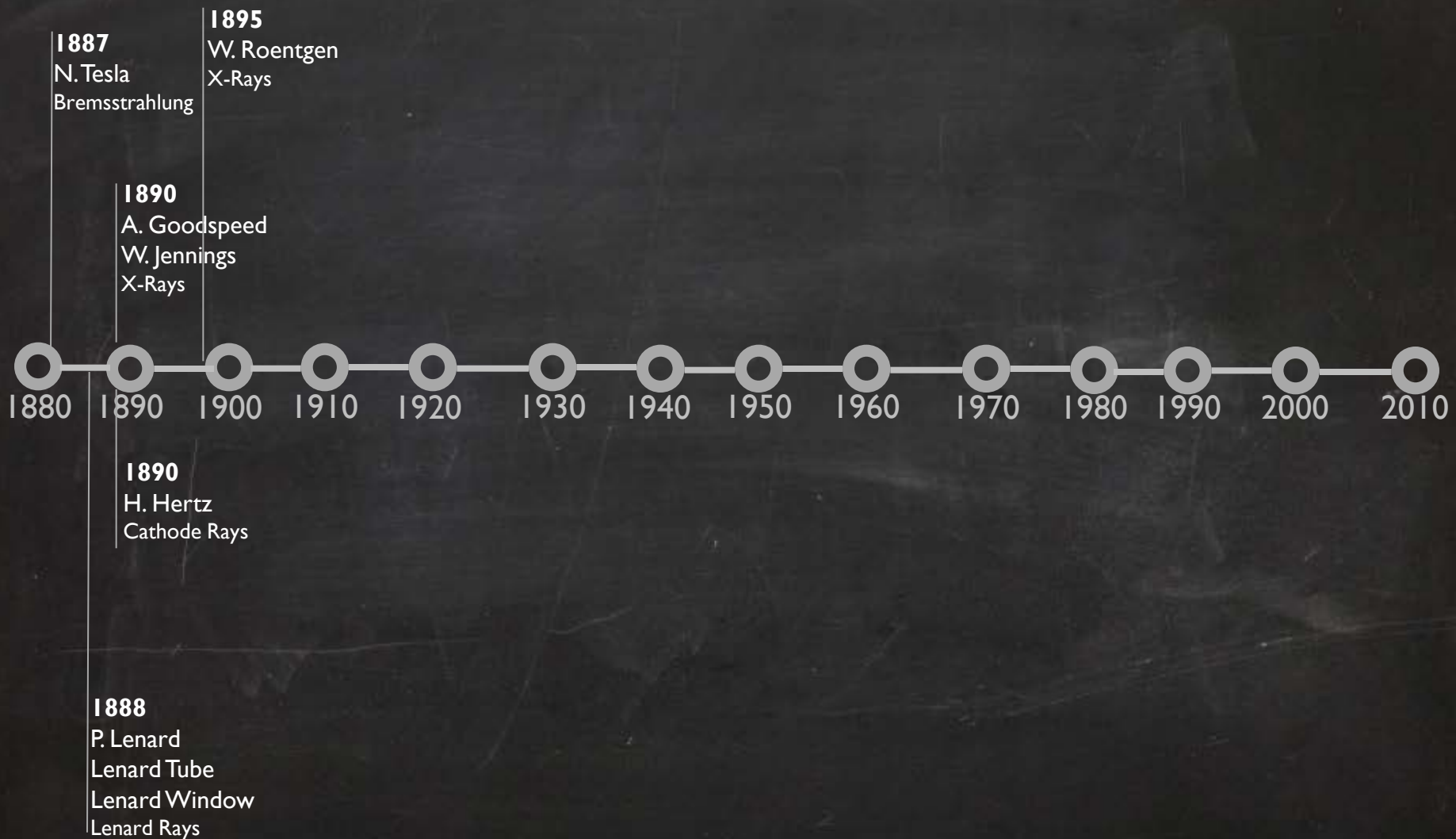
Canterbury
Christ Church
University

IPL Diagnostic Radiography - Faculty of Health & Social Care – Department of Allied Health Professions

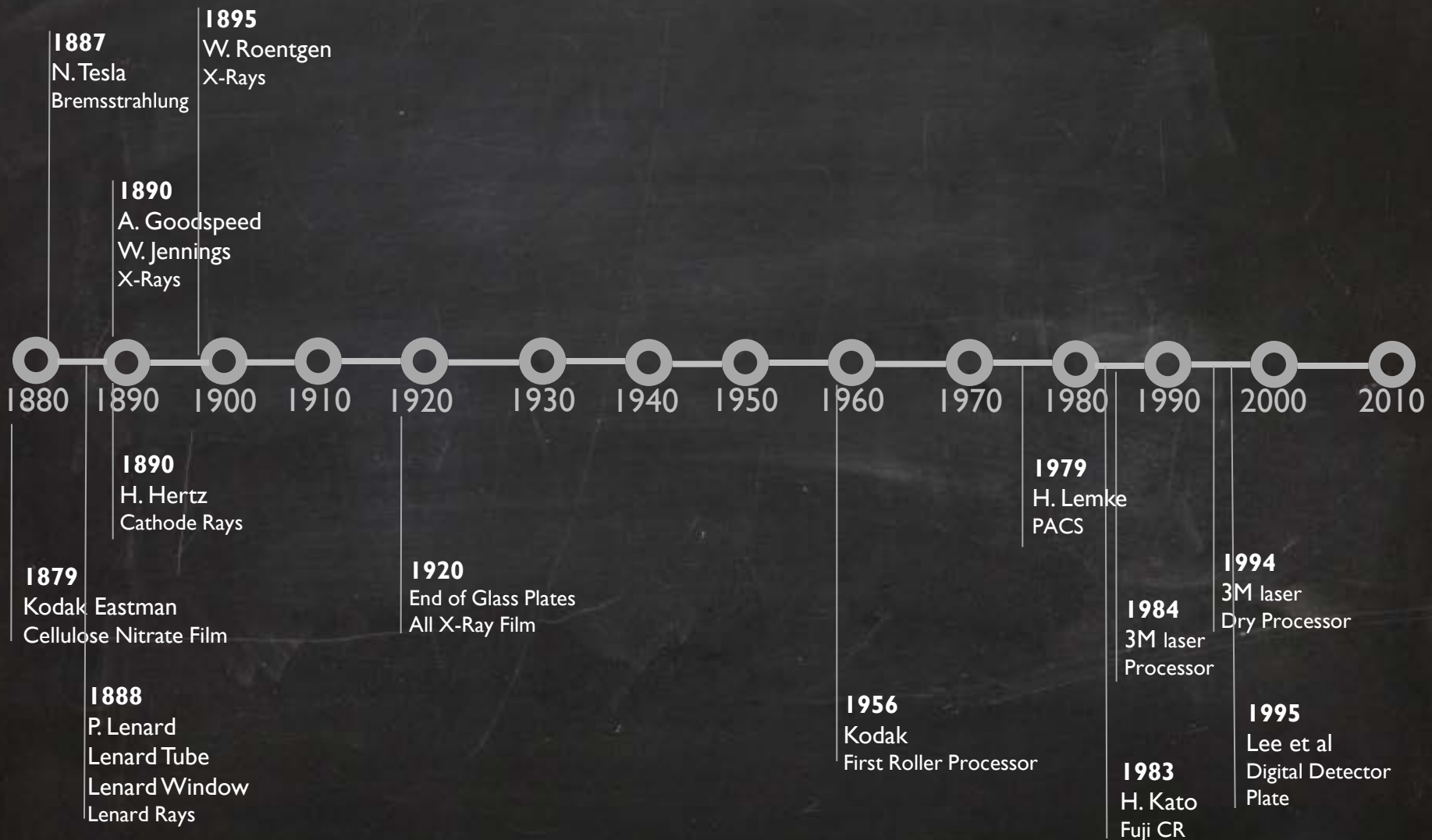
Origins of the Reporting Radiographer



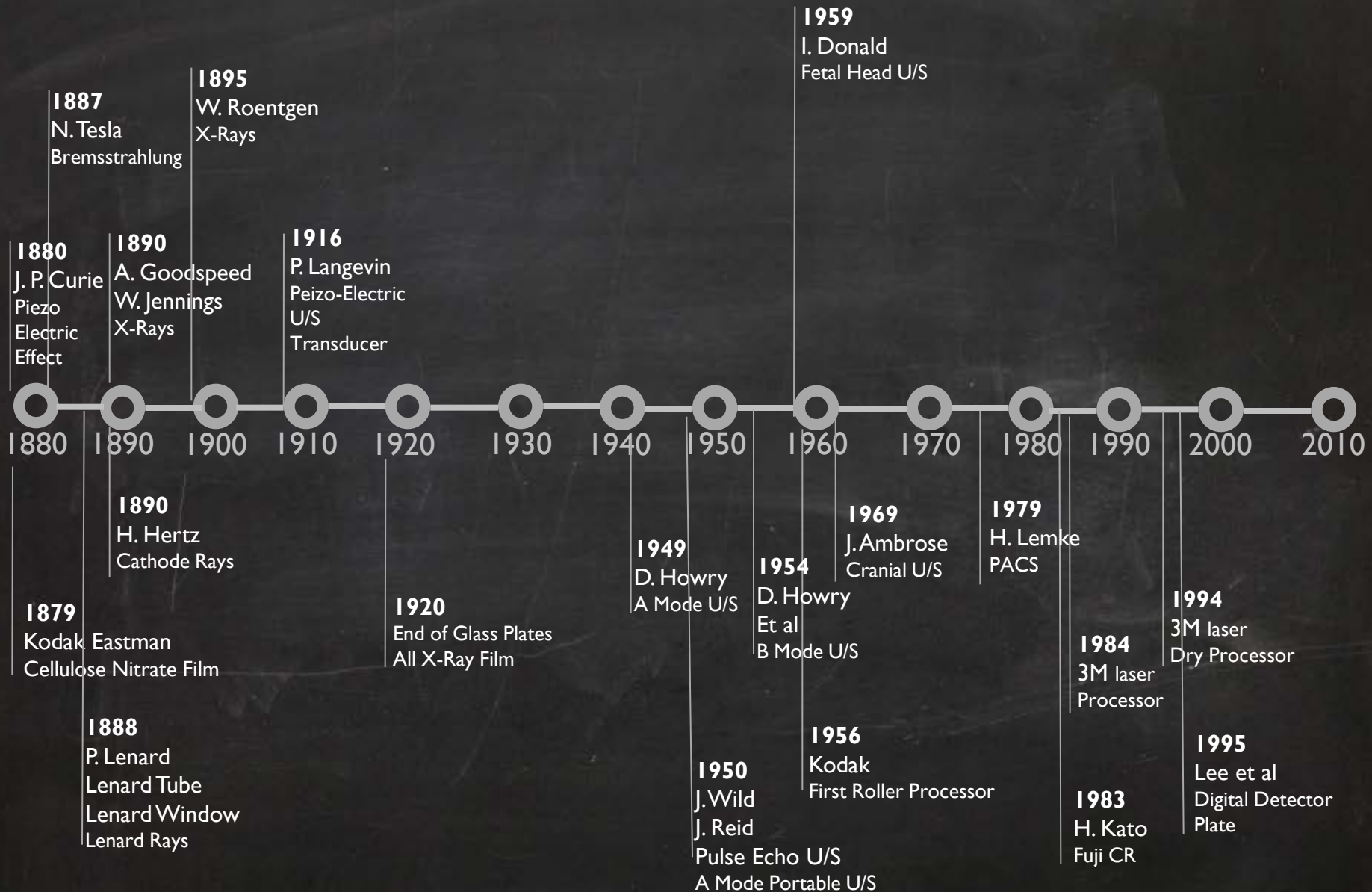
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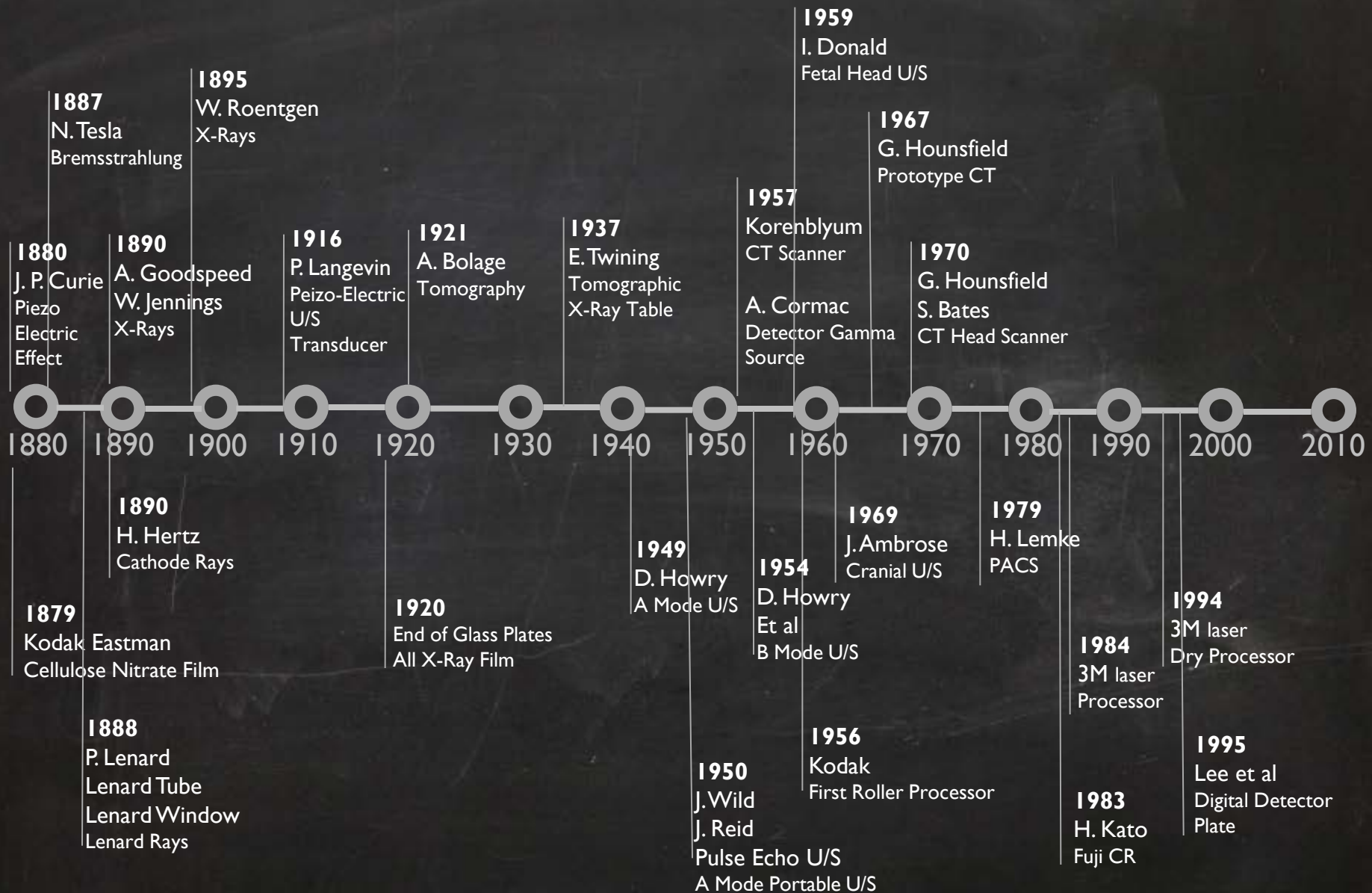
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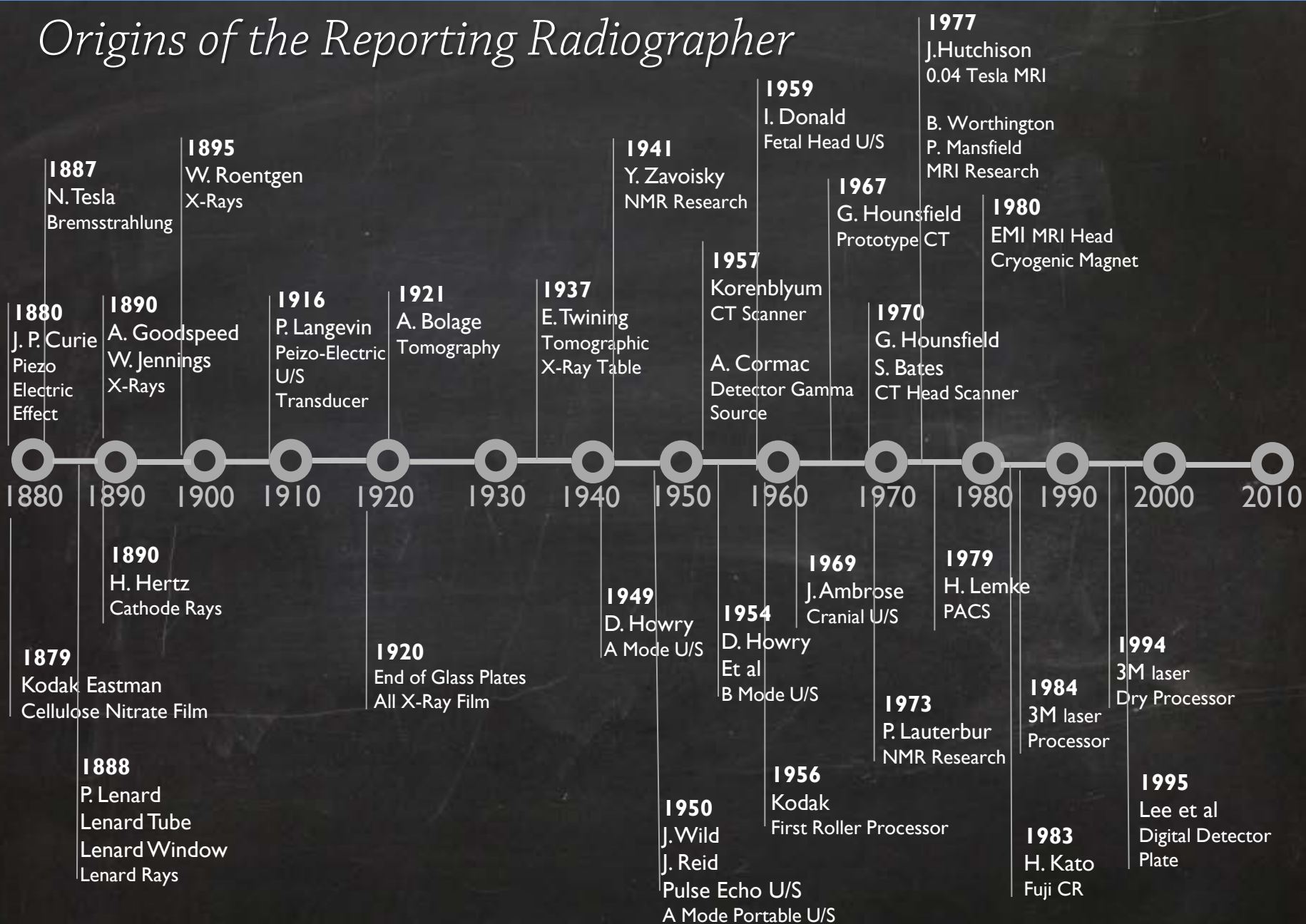
Origins of the Reporting Radiographer



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Origins of the Reporting Radiographer

1895

Wilhelm Rontgen (1845-1923)

“On A New Kind Of Rays” 28th Dec 1895



1895
Roentgen



Origins of the Reporting Radiographer

1903

British Medical Journal

BMJ “There is no reason for professional prejudices against the practice of radiology by lay-men so long as they confine themselves to the mere-mechanical act of producing a picture and abstain from assuming scientific knowledge of the bearing of the radiographs on a diagnosis or prognosis”



Origins of the Reporting Radiographer

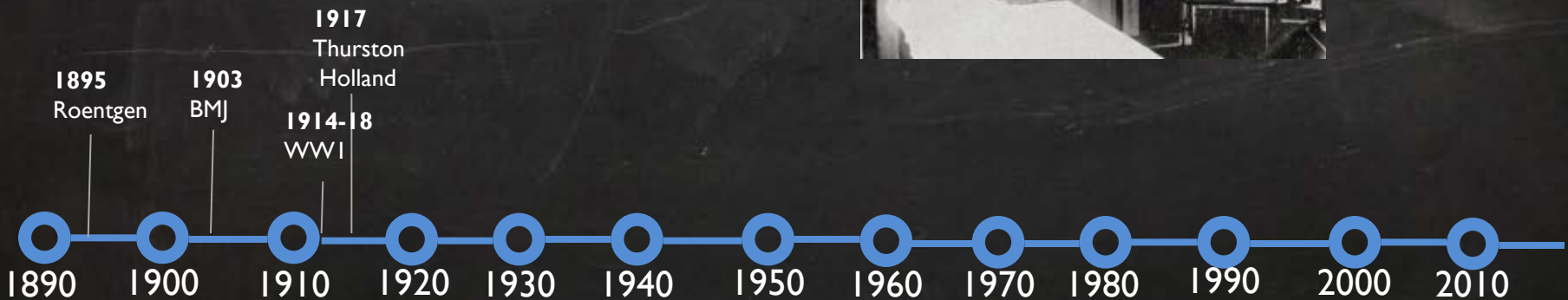
1914-1918

Non- medically trained army personnel taking and diagnosing x-rays

1917

Thurston Holland

“There is a prevalent idea from abroad that a radiologist is a mere photographer, and that any medical man can interpret radiographs. Never was there a greater mistake”.



Origins of the Reporting Radiographer

After WWI

The British Medical Association stated

“A good many of them have acquired more self confidence in diagnosis than is good for them or for the general public.....the practice of medical radiography by lay persons, except under direct instruction of medical practitioners, ought not to be encouraged.”



Origins of the Reporting Radiographer

1919

F. Hernaman-Johnson

'The place of the radiologist and his kindred in the world of medicine' – Stated

“to organise and educate the various classes of lay helpers, to see that their status, remuneration and prospects are such as to make them contented.

To educate the public as to why such people are at one and the same time invaluable as helpers, and extra ordinarily dangerous when they seek to practice independently.....

.....We should welcome lay assistance, and seek to organise and guide it. It is too late in the day to make a mystery of taking plates but the interpretation is ours for ever.”



Origins of the Reporting Radiographer

1920's

25th Anniversary of Rontgen's Paper

- Open gas tubes without protection
- No lead rubber gloves or aprons
- Radiographers used their hands to test the strength of the penetration of x-rays (if they -could see their hands on the fluorescent screen they had the correct exposure)
- Irradiating the scalp for ringworm in school children, holding head still with bare hands
- Caused x-ray burns requiring amputations



Origins of the Reporting Radiographer

1920's

- Increasingly complicated installations and equipment,
- SOR was the idea of Sir Robert Knox (Radiologist) at Kings Hospital, before 1912 Radiologists held the title of Radiographer
- First informal meeting in Welbeck St London, HQ of the BIR,
- With three radiographers
- A E Forder from Kings Hospital
- George Westlake Cancer Hospital
- Reginald Blackall London Hospital
- SOR financed by the British Association for the Advancement of Radiology and Physiotherapy and the Institute of Electrical Engineers



Origins of the Reporting Radiographer



1920's

- 1st SOR Council meeting 8/10/20
- Inaugural meeting 19/11/20
- Sir Archibald Reid 1st president
- Less than 50 radiographers in the country with more than 10 years' experience
- 12 members in the first month
- Established standards of radiography, conditions of service and status and qualifications



Origins of the Reporting Radiographer

1921

- 11/02/21 first exam 16 passed
- Now 67 members

1922

- Second exam 45 passed including Miss KC Clark
- Job adverts now asked for qualifications
- 115 members



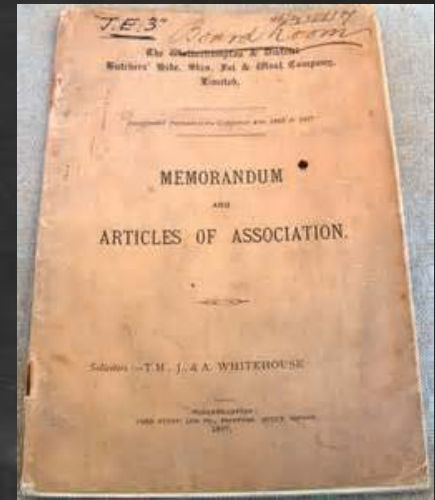
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1922

SOR discuss 'Articles of Association' to legally prevent radiographers from expressing an opinion on radiographs

1923

- Training now 8 months in x-ray with 12 months in a hospital;
- 164 members



Origins of the Reporting Radiographer

1924

February

-Council passed resolution “membership of the SOR does not imply that the member is in possession of the necessary medical knowledge or training for the giving of diagnostic reports and the responsibilities for diagnosis must rest with the medical man in charge of the case”

-A special general meeting held – Members discontent and dissatisfaction with ruling concerning the responsibility for diagnosis and ordering treatment ‘their case’ grown up with radiography the ability to report was part of their skill and ability, as such they should be allowed to use it.



Origins of the Reporting Radiographer

1924

Article 27 of Articles of Association

President amended resolution so non-medical will work under direct supervision of a doctor and will not make reports or diagnosis, breach would be deemed conduct unfitting a member would be dismissed from the SOR



Origins of the Reporting Radiographer

1925 Jan, Feb, March

Article 28 of Articles of Association

- Meetings of members complaining about loss of reporting abilities which was the start of 3 years of meetings to resolve the issue.
- GMC was not happy.
- Article 28 written to restrict the activities of radiographers, particularly in respect of giving any form of report on examinations
- Further internal meetings arguing the fears that the BMA would object to SOR if it changed Article 28



Origins of the Reporting Radiographer

1926

- SOR and BIR affiliation and SOR moved to the BIR HQ Welbeck St. London
- Standards of training schemes set up



Origins of the Reporting Radiographer

1927

- First exams outside of London in Manchester
- Scottish radiographic society merged with SOR

1928

- 20 month training programme
- 8 month hospital training in x-ray then part 1 exam of theory
- 12 month hospital training in x-ray then part 2 exams on practical
- Age limit set for training at 21 years
- Satellite offices in Manchester, Birmingham, Liverpool, Scotland, Sheffield and Newcastle



Origins of the Reporting Radiographer

- 1929**
 - Discussion on diagnosis and reporting started again with the SOR forming links to the BIR
- 1930**
 - Asked to be affiliated with South Africa
- 1931**
 - Education subcommittee of Miss KC Clark, Mr H Ede and Mr, CW Furby
 - Now diploma course
- 1932**
 - SOR set up first endorsed training school at Guys Hospital London followed closely by other hospitals in London, Glasgow, Middlesex, Dublin and Johannesburg



Origins of the Reporting Radiographer

1935

- 2 years training
- Radiography insert in the BJR magazine

1939

- Miss KC Clark “Positioning In Radiography” became the standard textbook
- Civil Defence Act
- SOR joined the British Association of Radiologists in the ‘Emergency Medical Services’

1940

- Radiographer numbers dropped, Miss KC Clark starts to train up Radiography Assistants.



Origins of the Reporting Radiographer

1943

- Beverage Report on the creation of the NHS

1944

- Joined the talks about the creation of the NHS
- Separate Radiotherapy exam
- White Paper – NHS
- Whitley Council creation but no Radiography representation on regional hospital boards

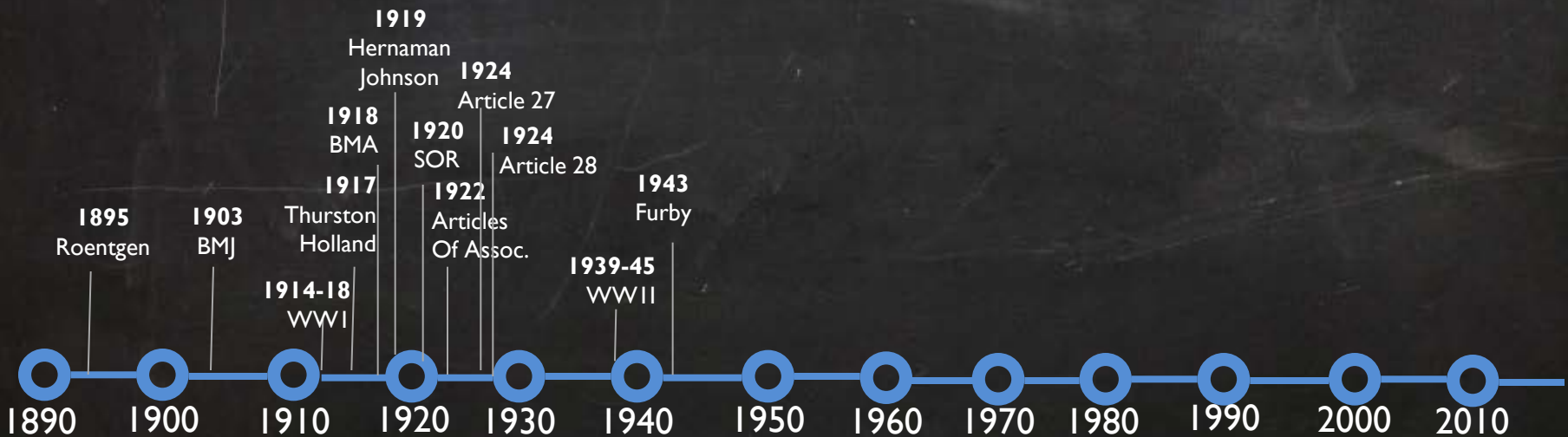


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1943

L Furby (Radiographer) Article

“The Primary function of the Radiographer is to be of utmost service to the radiologist. The function of the Radiologist is the interpretation of the radiograph”.



Origins of the Reporting Radiographer

1945

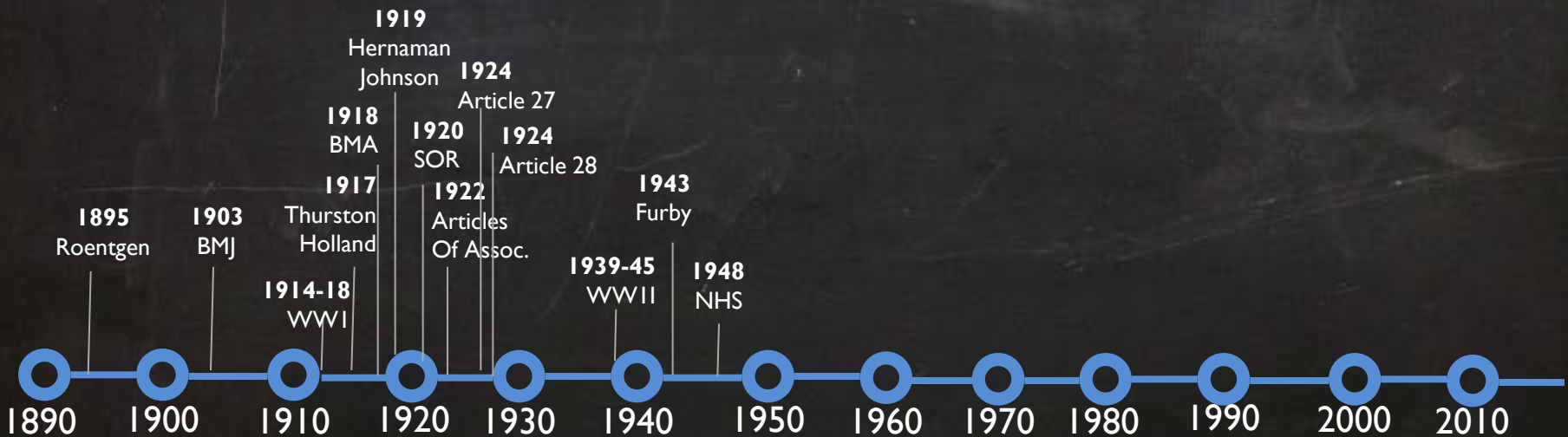
- Radiotherapy qualification launched

1948

- NHS Launched

1951

- Cope Report recommending register for NHS Staff
- Industrial court claim for improved salaries as no raise since 1946



Origins of the Reporting Radiographer

1954

- Medical Auxiliaries Regulations, illegal for NHS to employ unqualified staff due to negligence

1955

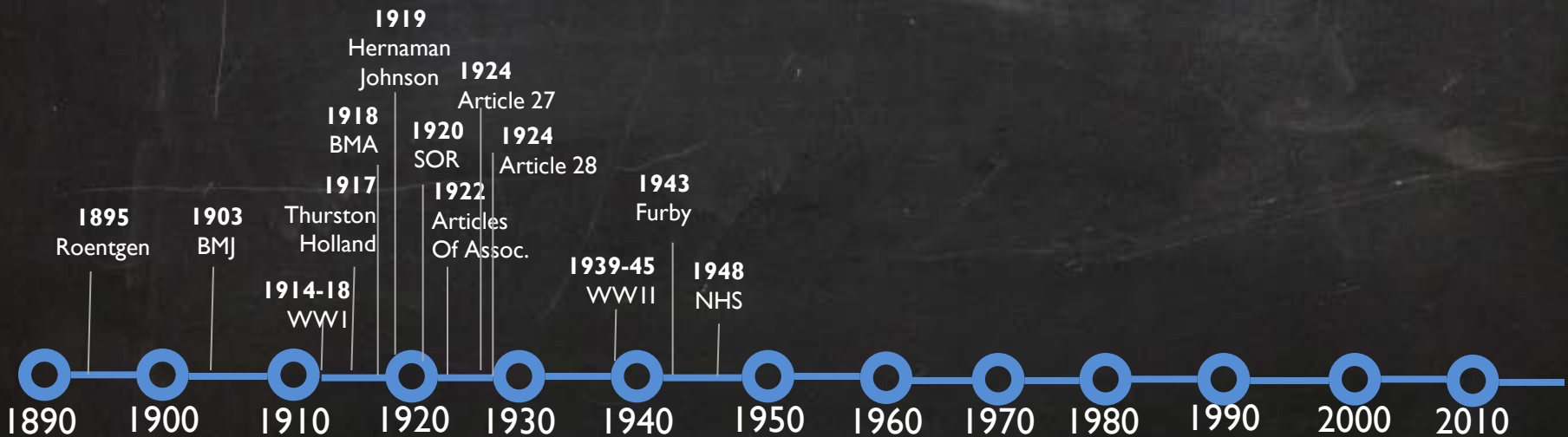
- Link to Dutch SOR and American AART

1956

- 20,000 passed exams (800 a year)

1960

- Statutory Regulation of Medical Auxiliaries



Origins of the Reporting Radiographer

1961

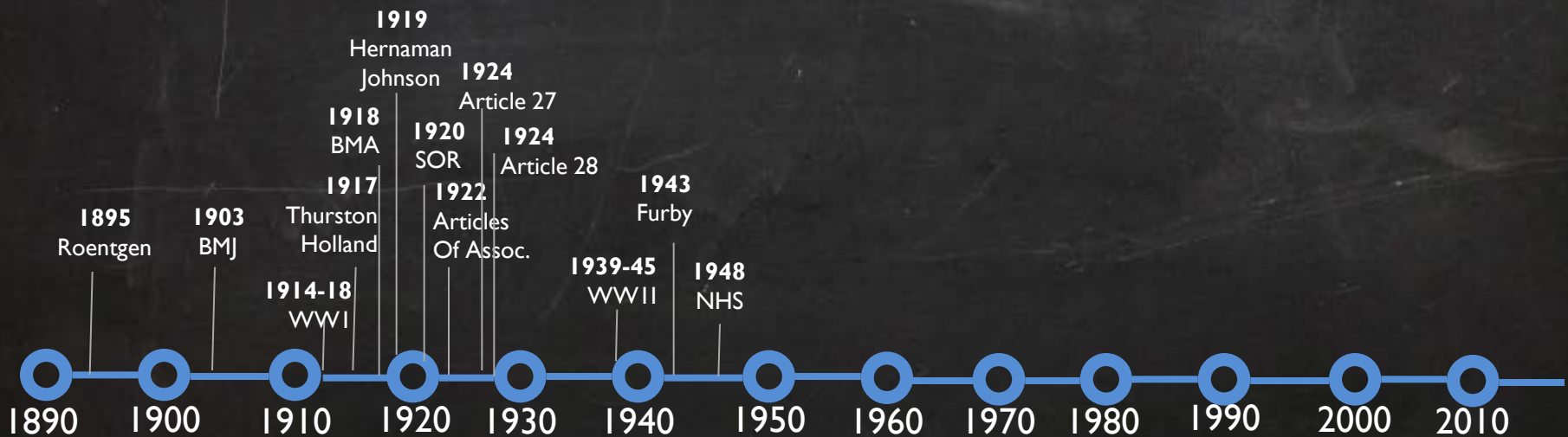
- Council for Professions Supplementary to Medicine sets up standards of education

1966

- 3 year training
- Shortage of Radiologists

1969

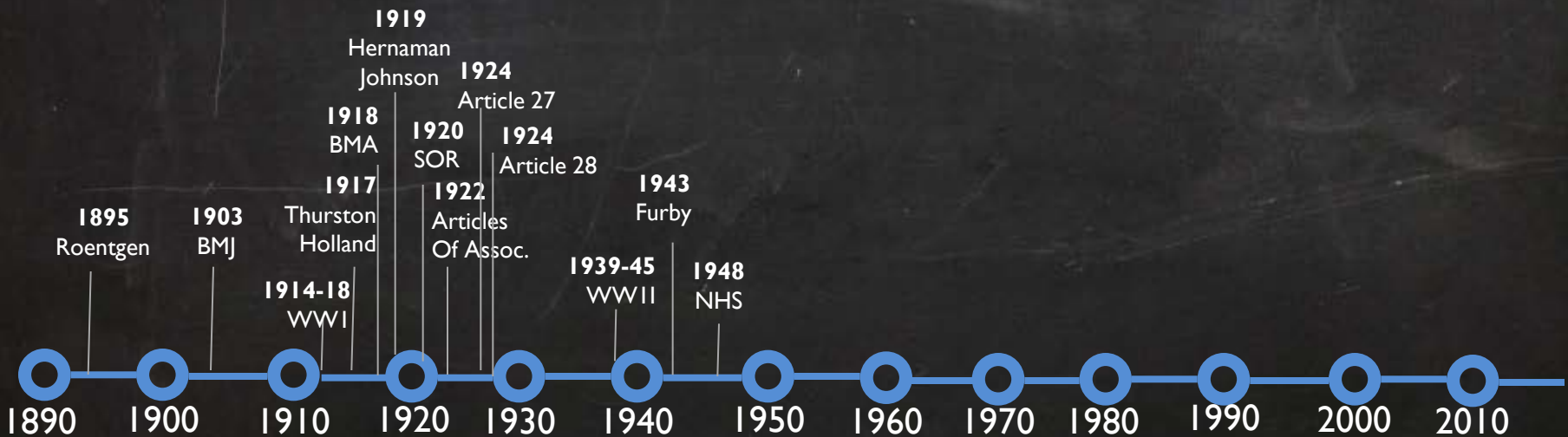
- 80% of admissions go through x-ray department



Origins of the Reporting Radiographer

1970

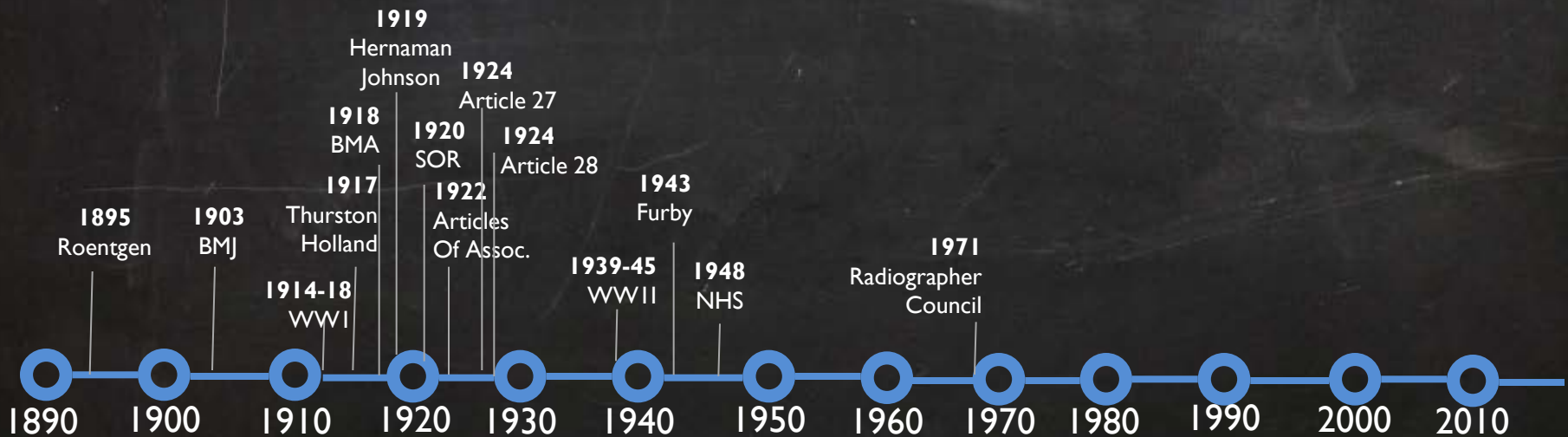
- Still Faculty of Radiologists (later RCR) on SOR council
- Schools of radiography moved out of hospitals into technical colleges
- 6,661 members (90% women)
- SOR Council 20 members (6 women)
- Links to Nigeria, Hong Kong, West Indies, Kenya, Singapore, Malaysia, South Rhodesia, Sri Lanka, New Zealand
- 'Grey Book' NHS Management re-organisation, take Radiographers away from running the department.



Origins of the Reporting Radiographer

1971

- Move to allow only Radiographers on SOR council
- Introduction of Nuclear Medicine into training
- Move from MSR Member of SOR to DSR Diploma of SOR
- Radiographers on average only staying in profession 6-8 years due to poor salaries and conditions of service
- Some departments having 100% turnover of staff every 2/3 years



Origins of the Reporting Radiographer

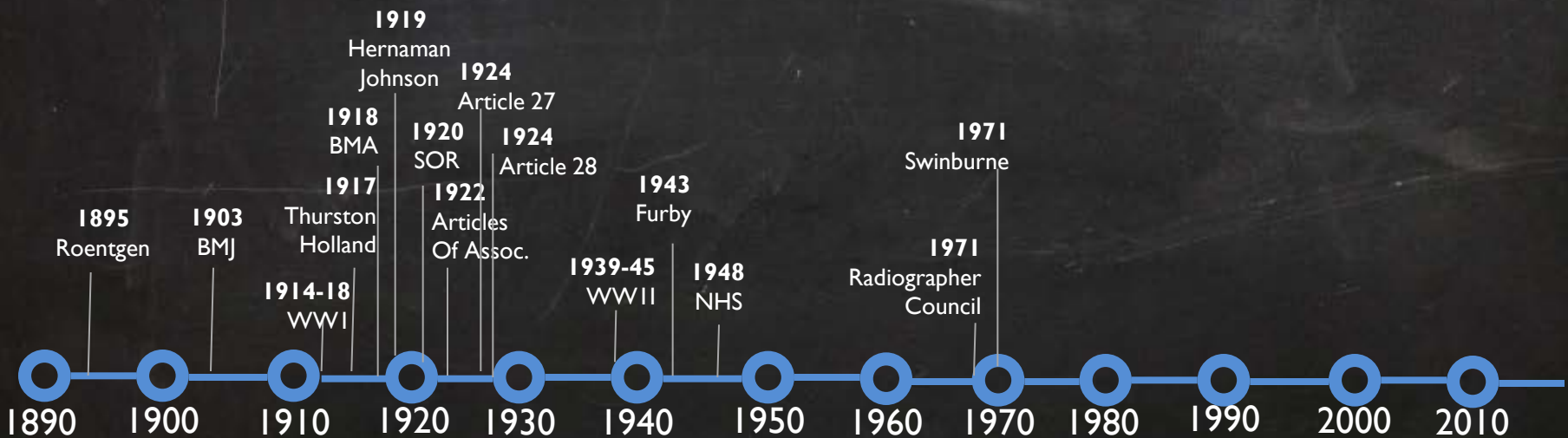
1971

Lancet article Dr K Swinburne (Radiologist)

‘Pattern Recognition For Radiographers’

Proposed that Radiographers could be used to distinguish between normal and abnormal films. He justifies this suggestion on two grounds: (i) ‘The chronic shortage of Radiologists’ and (ii) the fact Radiographers seemed to function below their full potential.

- Helped pave the way for Ultrasound examinations and reporting although Issues of responsibility, legality and professional insurance from Scottish SOR



Origins of the Reporting Radiographer

1972

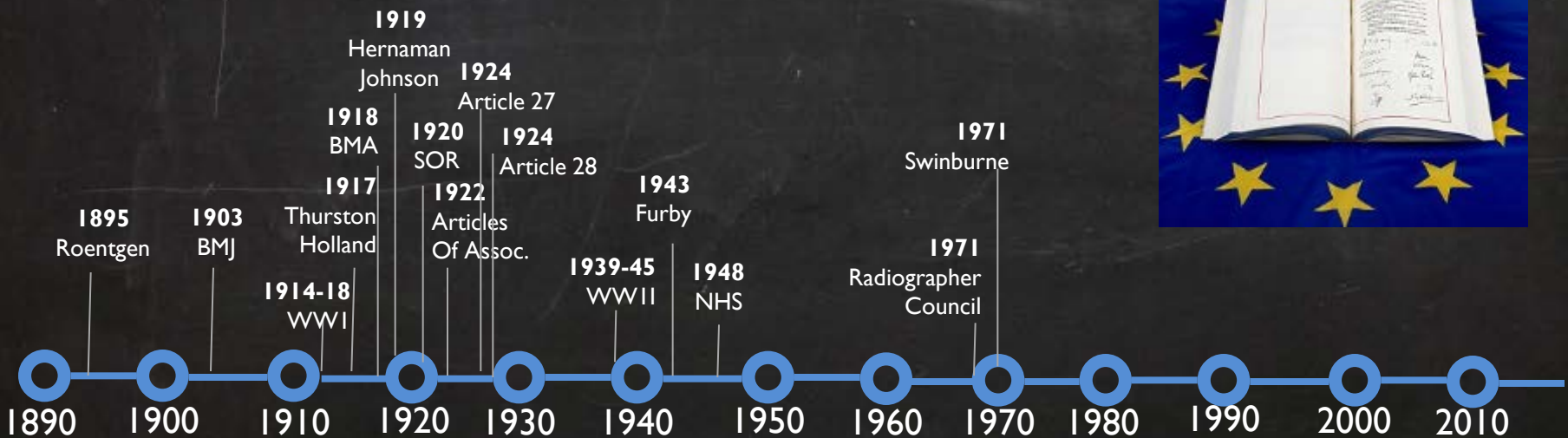
- 'Treaty of Rome' cross border recognition of qualifications and training
- UK and Holland very Scientific, Scandinavia Nurse Radiographers very much patient care

1973

- Short fall of 25% of radiographers due to poor pay and conditions (inflation was 25%)
- 80% of radiographers called for strike

1974

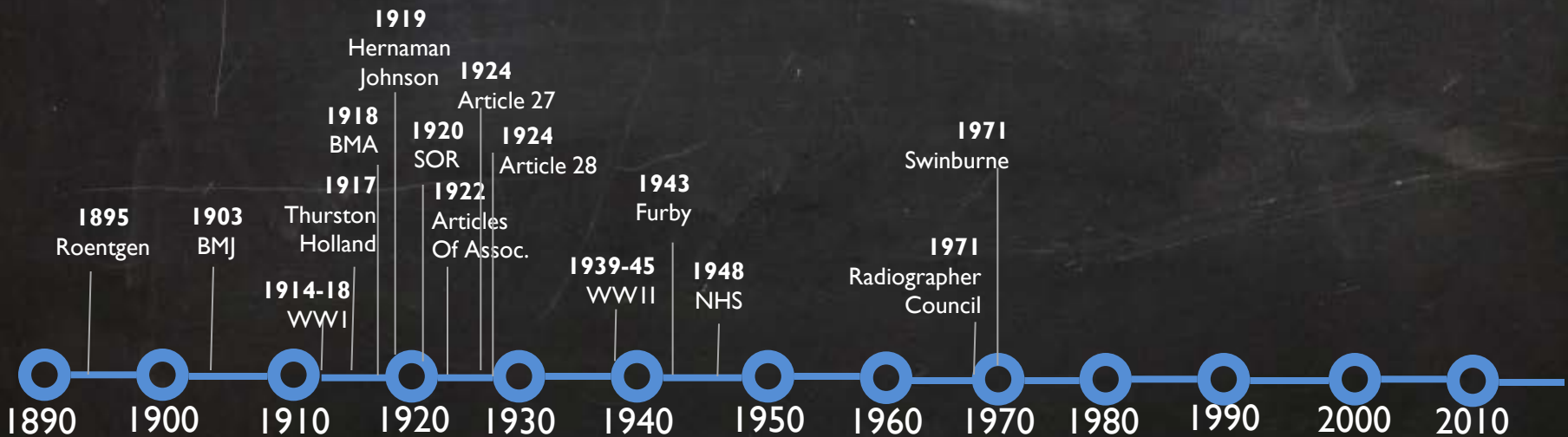
- SOR and European countries reviewed different approaches to radiography practice
- Whitley council clarification on 'Forensic' work as voluntary service negotiated locally with coroner's office



Origins of the Reporting Radiographer

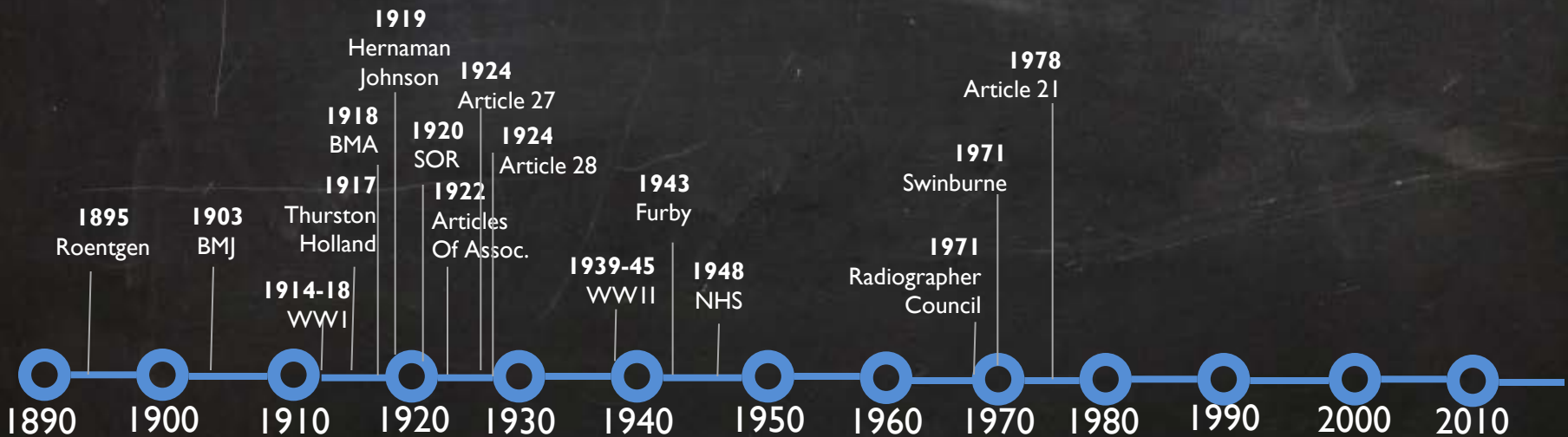
1976

- DHSS attempted to get certain radiography tasks carried out by unqualified staff, reoccurring theme for the next 30 years
- SOR became registered as a trade union
- DHSS failed to fund the Diploma in Ultrasound
- Obstetrician wrote an article saying Midwives should be the ones to undertake Obstetric ultrasound not radiographers



Origins of the Reporting Radiographer

1978
COR amended 'Article 21' to allow ultrasound reports to be issued by radiographers supported by the DHSS



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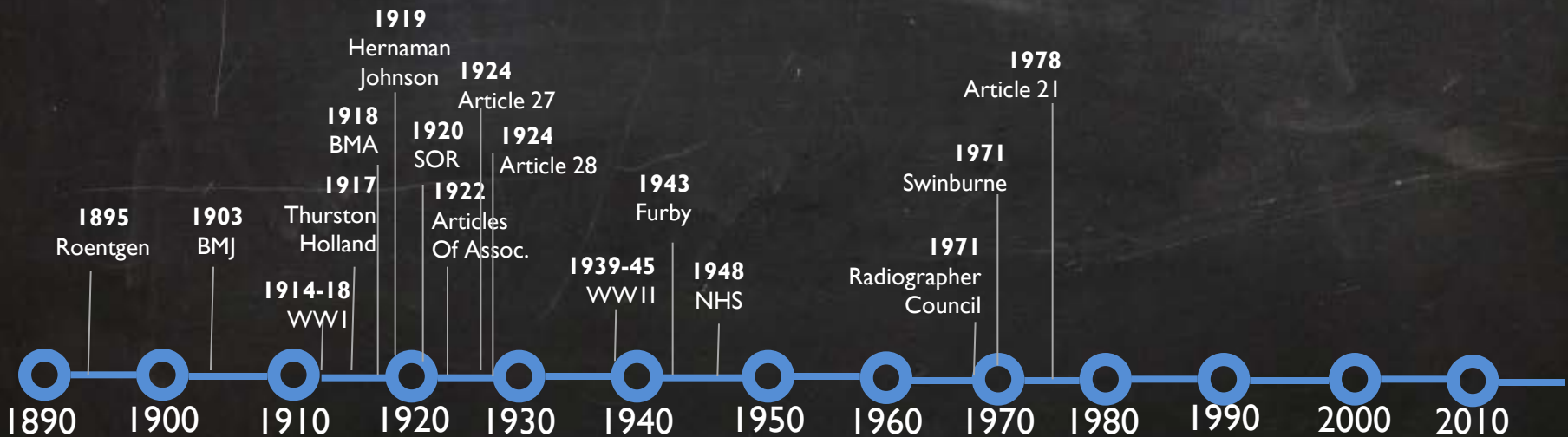
1981

Dounreay Nuclear Power Station 'ironically' ignoring hazards of medical radiation by allowing 'Occupational Nurses' to x-ray staff

1982

Chiropodists wanted to take their own x-rays and report their own films, the issue being Chiropody was not in the NHS, so they were getting patients to pay for their own films.

10,000 members

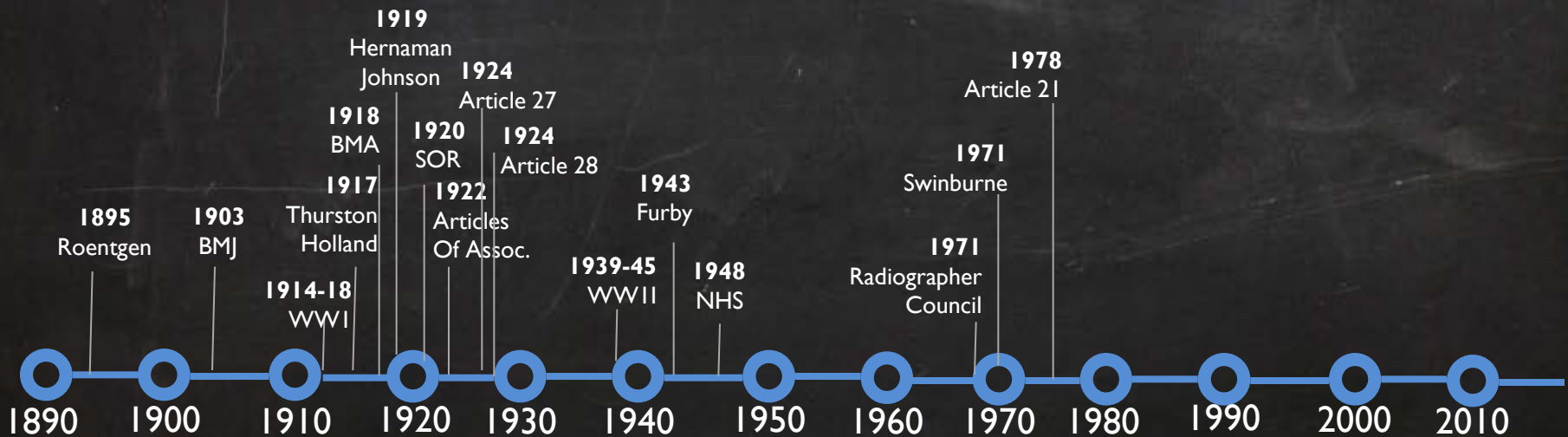


Origins of the Reporting Radiographer

1983

RCN wanted 'Occupational Nurses' to take x-rays, luckily this was against NHS state regulations as they weren't registered to take x-rays.

RCN also back tracked an advised any nurse using an Image Intensifier in theatre would not be entitled to Indemnity Insurance as it was not part of their duty.

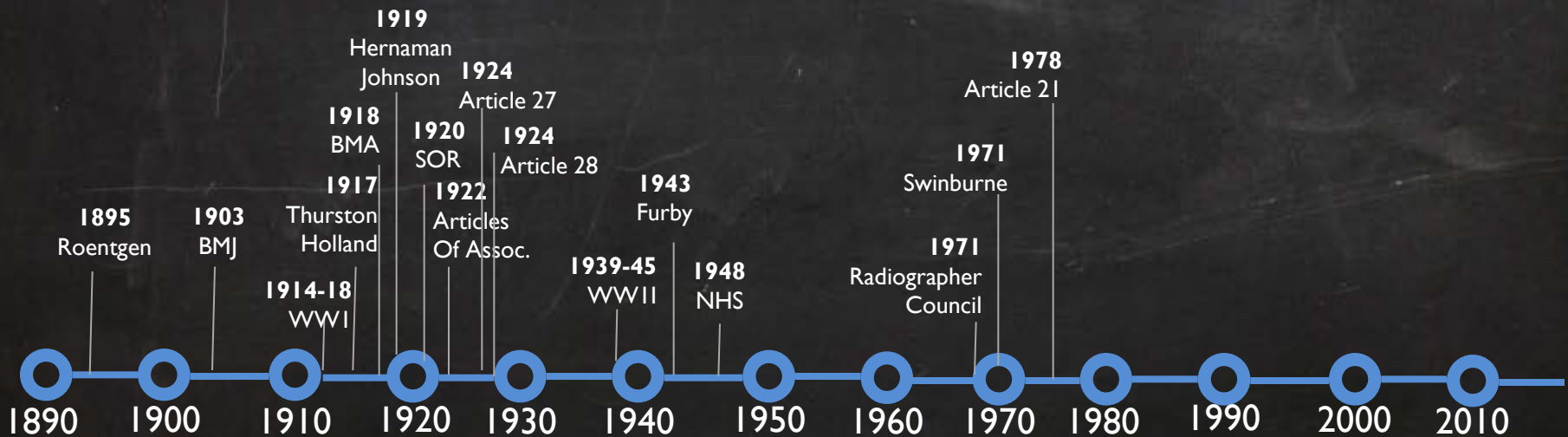


Origins of the Reporting Radiographer

1985

SOR unable to get Ultrasound state registered as by then too many different professions were using it.

The Home Office decided prisoners were 'private patients' and as such didn't need state registered radiographers as not part of the NHS, changed their minds when they read the IRR regulations



Origins of the Reporting Radiographer

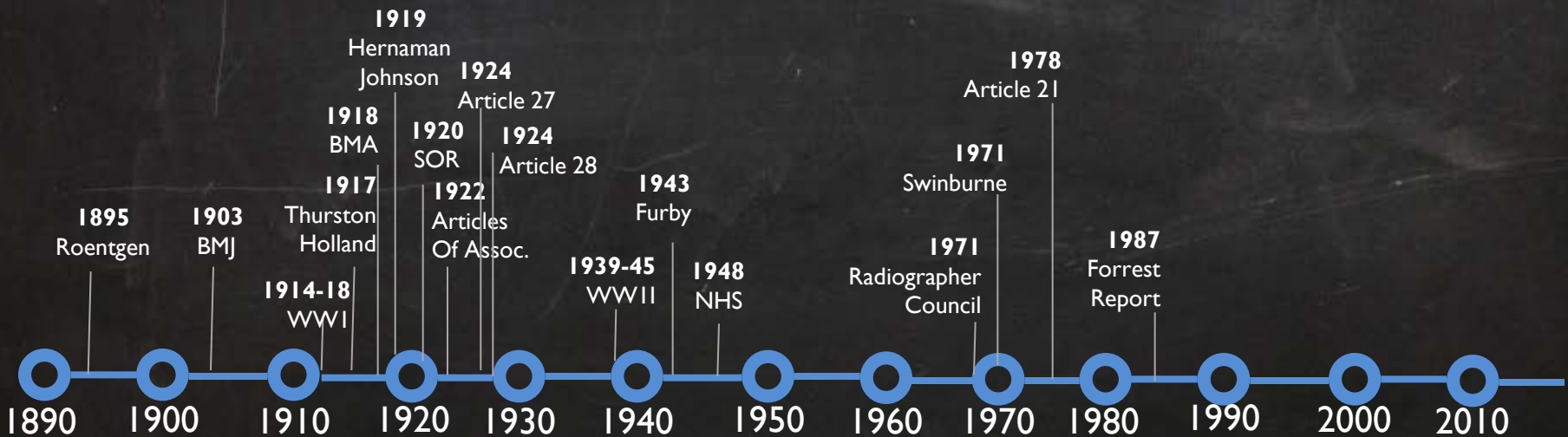
1986

SOR discussed referrals from A&E Nurses (RCR not happy to accept) but agreed, with Radiographers keeping the right to decline unjustified requests

1987

‘Forrest Report’ recommended a national breast screening service

- Acceptance of referral from non-medical sources
- Possibility of Radiographers issuing written reports



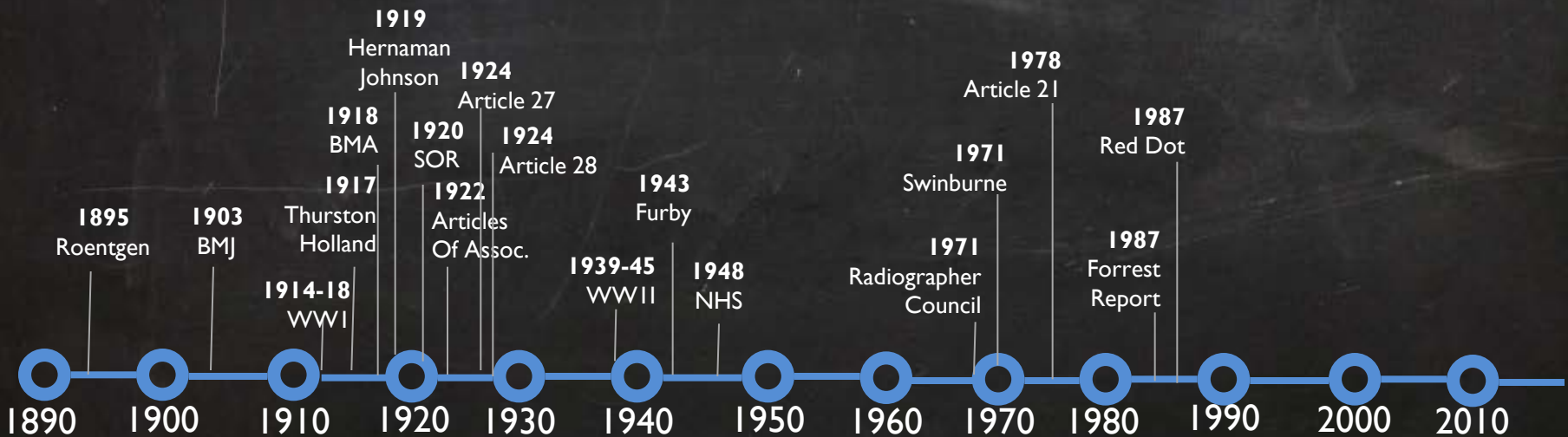
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1987

N Cheyne, Q Field-Boden, R Hall

‘The Radiographer and Frontline Diagnosis’ – “Concept of ‘Red Dot’ system, halfway house between reporting and non-reporting radiographers



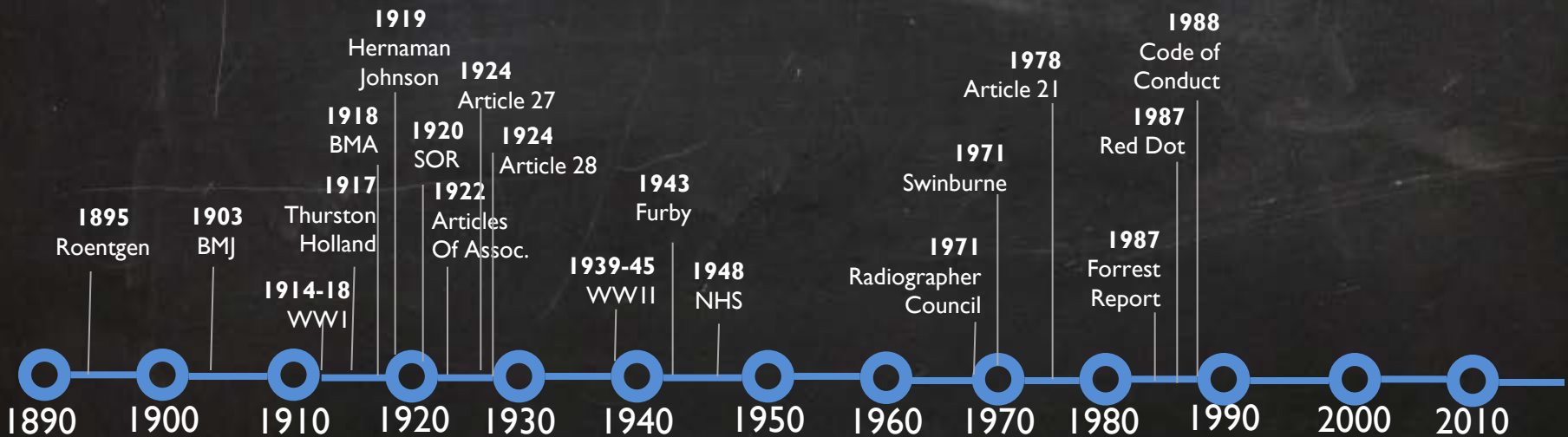
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1988

COR amended the 'Code of Professional Conduct'

To state that 'A Radiographer may provide a description of images, measurements and numerical data, especially in medical ultrasound'

UKAS UK association of Sonographers



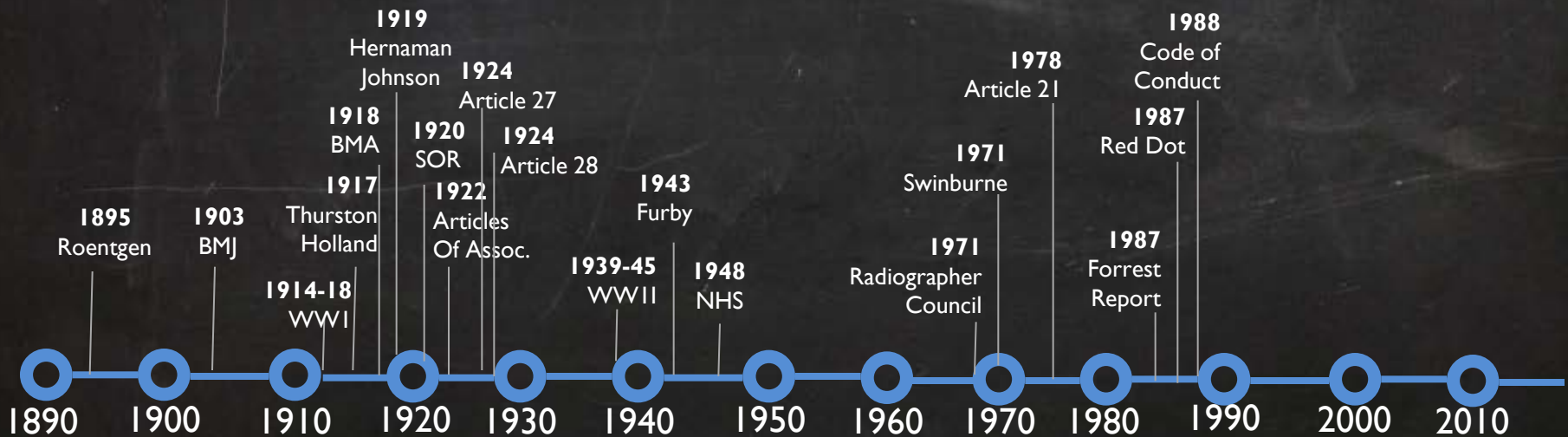
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1991

Government 'Green Paper' targets for improvements

1992

Government 'Patient Focus' NHS Scheme, each ward will have its own pathology, radiology, physiotherapy, didn't happen.

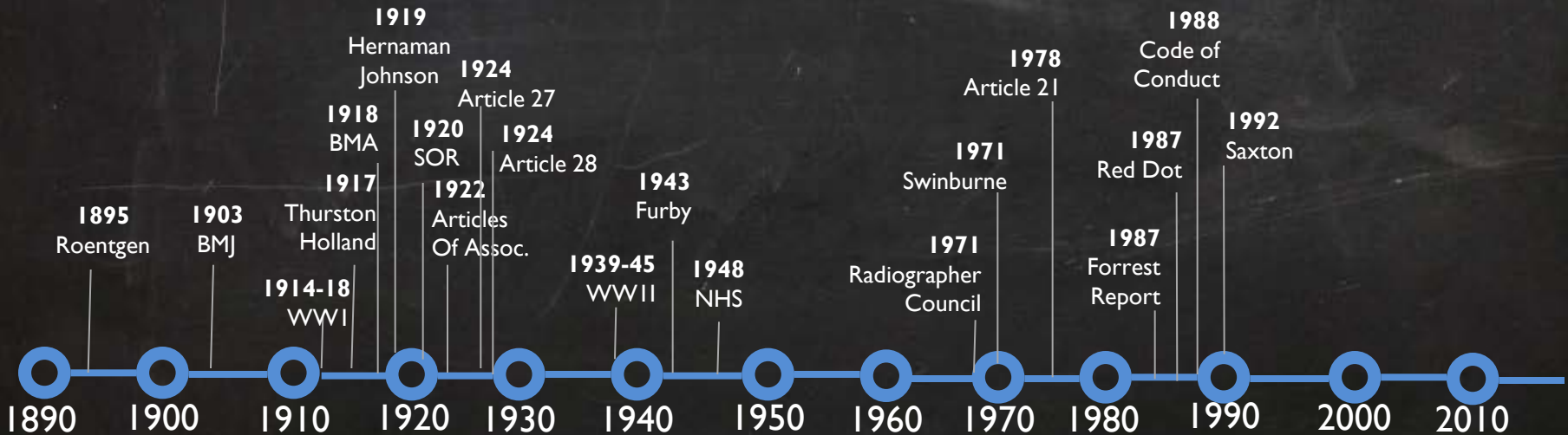


Origins of the Reporting Radiographer

1992

H, Saxton Editorial in 'Clinical Radiology'

'Turning to the field of interpretation, there is little doubt that with careful training, suitable radiographers could undertake reporting, in such areas as mammography, screening, or fracture reporting on accident and emergency films'.



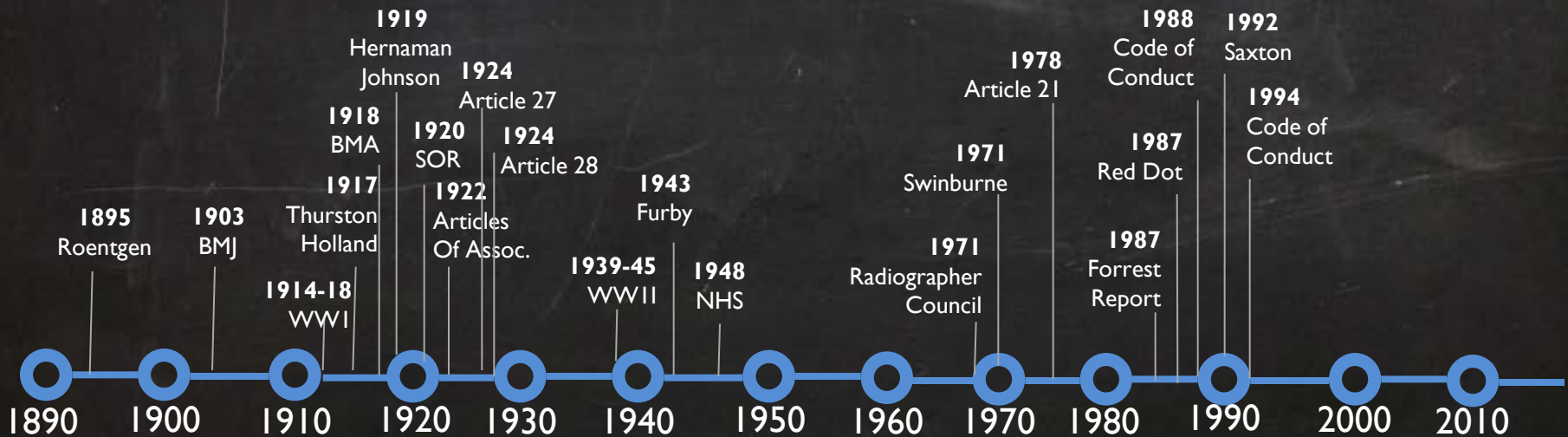
Origins of the Reporting Radiographer

1994

January workshop for x-ray interpretation for Nurses and Allied Health Professions (Worryingly not for radiographers)

March the SOR and COR started discussions on reporting, a full circle back to 1920's. COR 'Code of Professional Conduct'

Which promoted the view that radiographers should provide verbal and written reports on image appearances - thus formalising the previous informal practice of providing verbal comments on images, especially to Accident & Emergency (A&E) staff

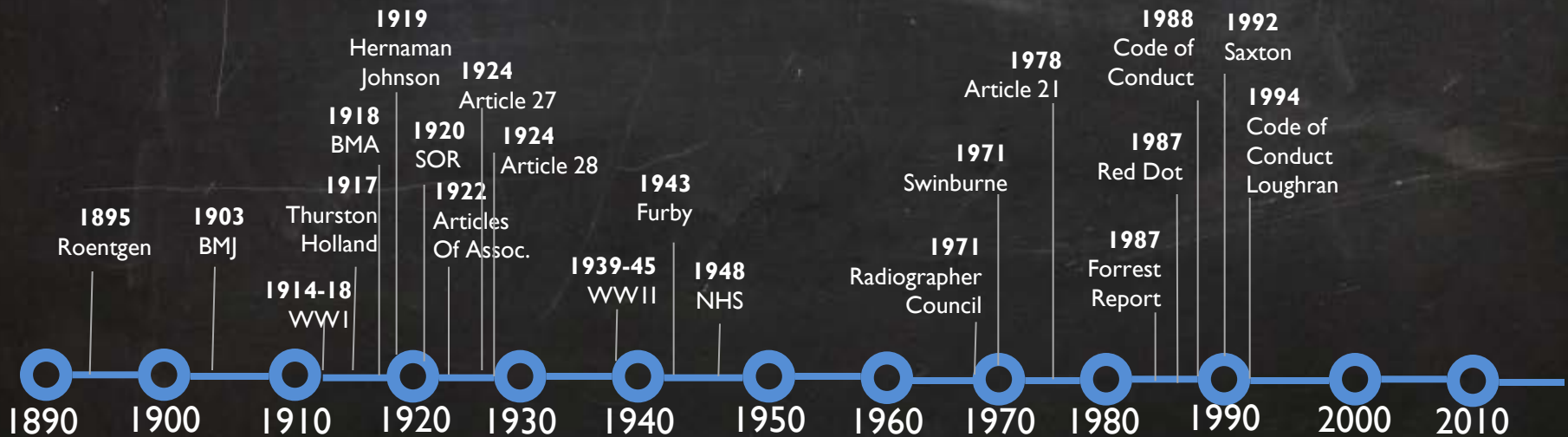


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1994

Loughran – Teaching Hospital

Published the first account of trauma radiology training for a test group of Radiographers

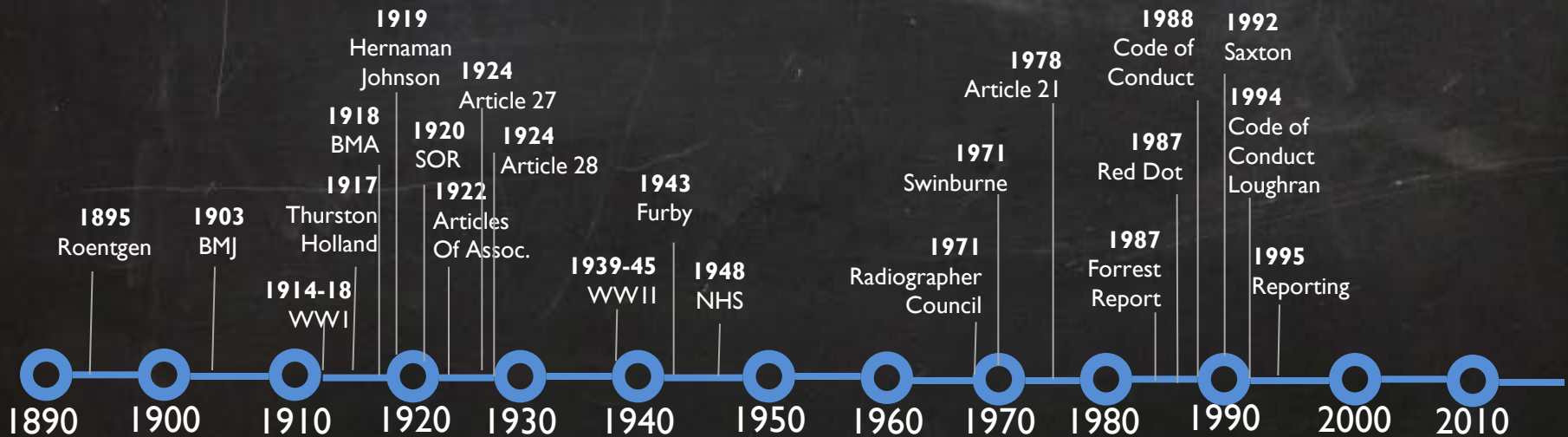


Origins of the Reporting Radiographer

1995

'Extended Role Of The Radiographer'

One off project by Leeds College of Health and St James University Hospital (Funded by DOH) to test training of Radiographers to report trauma, chest and abdominal films



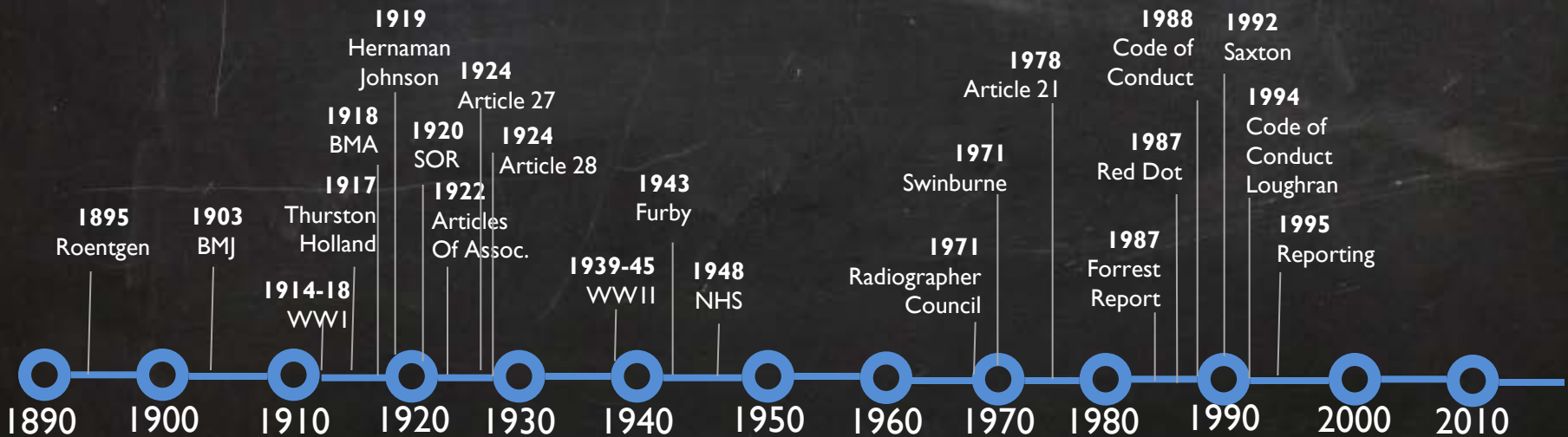
Origins of the Reporting Radiographer

1995

Audit Commission Report

‘Improving Your Image: How to Manage Radiology Services More Effectively’

Noted a ‘failure of Radiology departments to provide a report on all examinations, many being received too late to influence patient management’

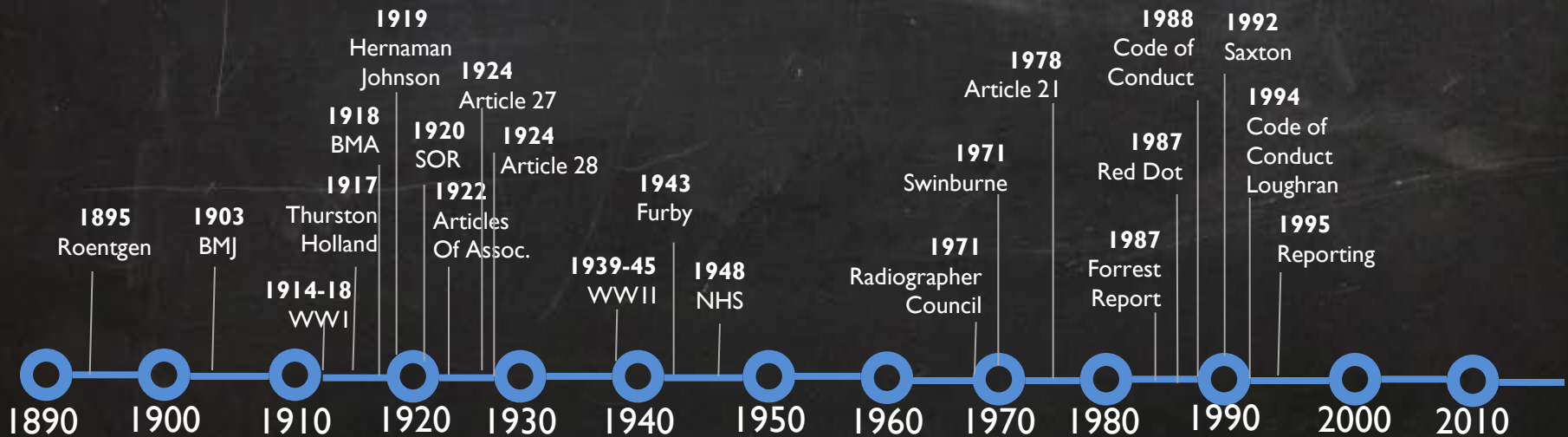


Origins of the Reporting Radiographer

1995

Board of the Royal College of Radiologists (RCR)²

“there may be no statutory impediment to a non-medically trained person reporting a radiological examination and making technical observations, but the person without a medical training cannot reasonably be expected to provide a medical interpretation”.



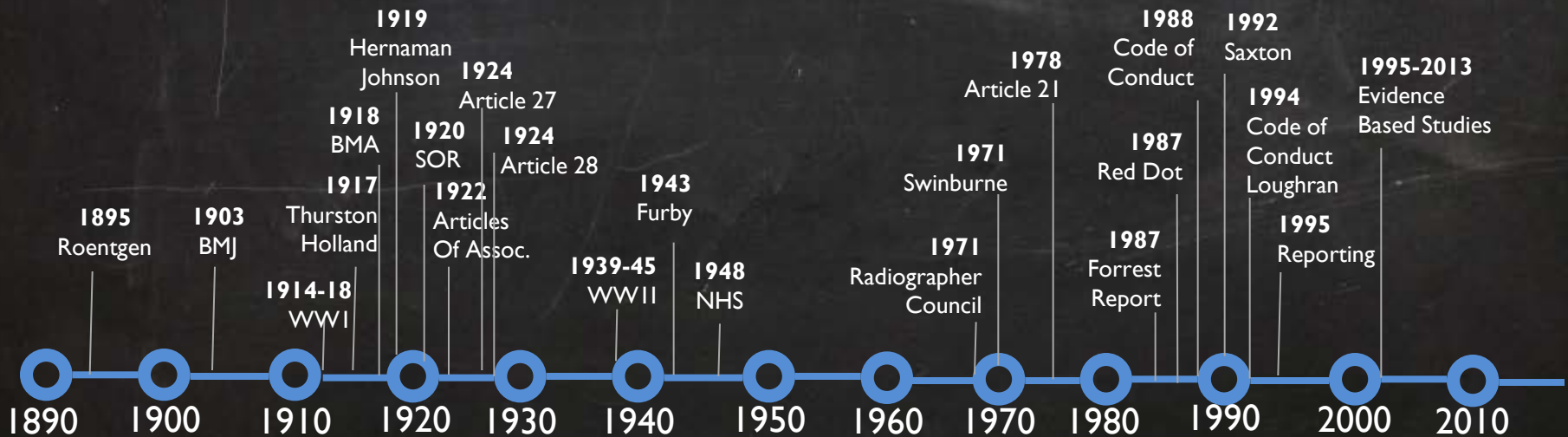
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1995

SOR Accredited the CCCU as the First University to develop and run a Postgraduate Radiographer Trauma Film Reporting Course

Followed by University of Bradford, Hertfordshire, Salford and London South Bank University

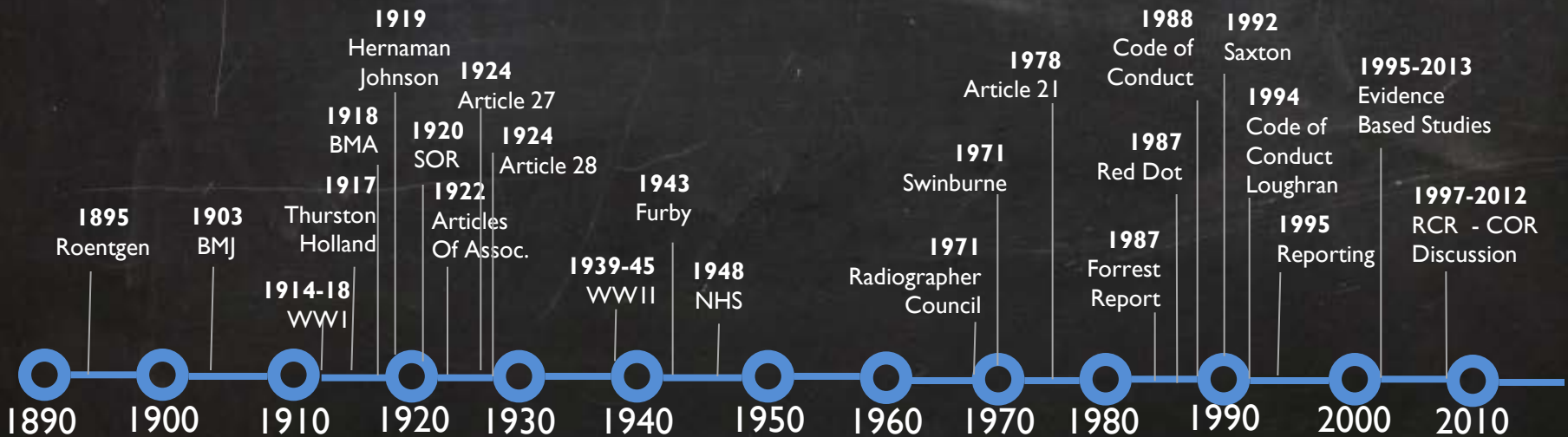
13,500 radiographers nationally



Origins of the Reporting Radiographer

1997

COR 'Reporting By Radiographers – A Vision paper' stated as its policy that the reporting of images by radiographers was “not an option for the future but is a requirement”.

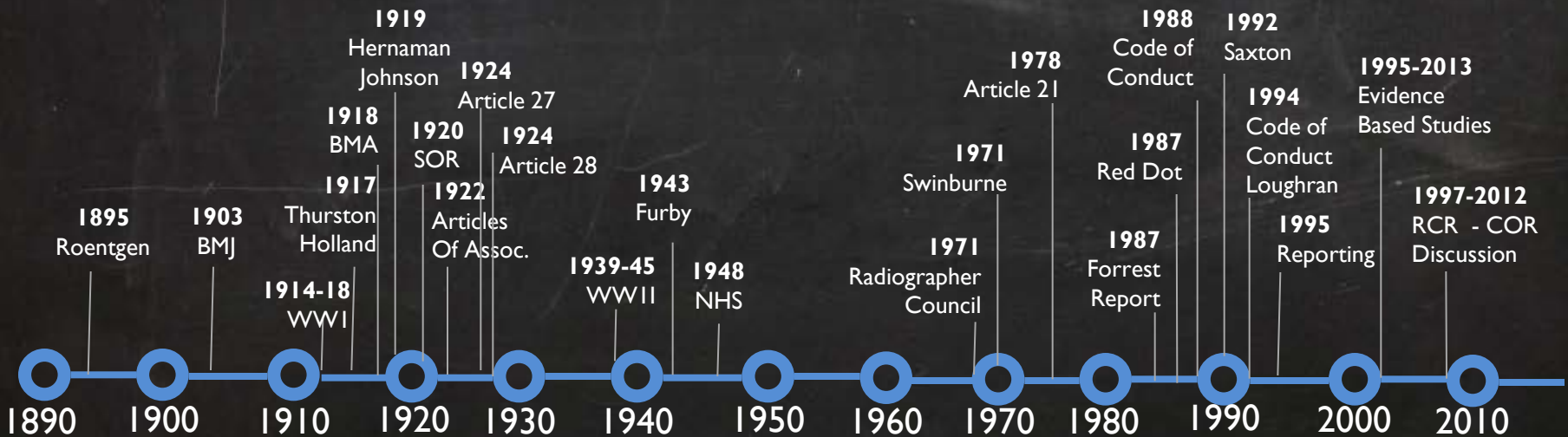


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1998

RCR 'Inter-Professional Roles & Responsibilities In A Radiology Service'

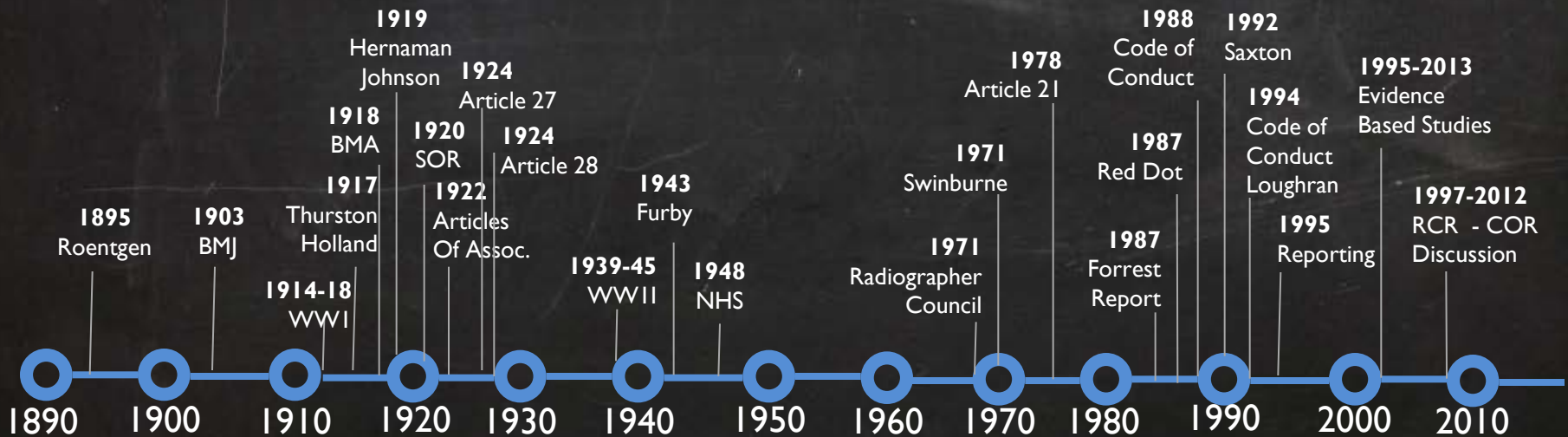
COR 'X-Ray Examination Requests By Nurse Practitioners and Radiographic Reporting By Radiographers'



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1999

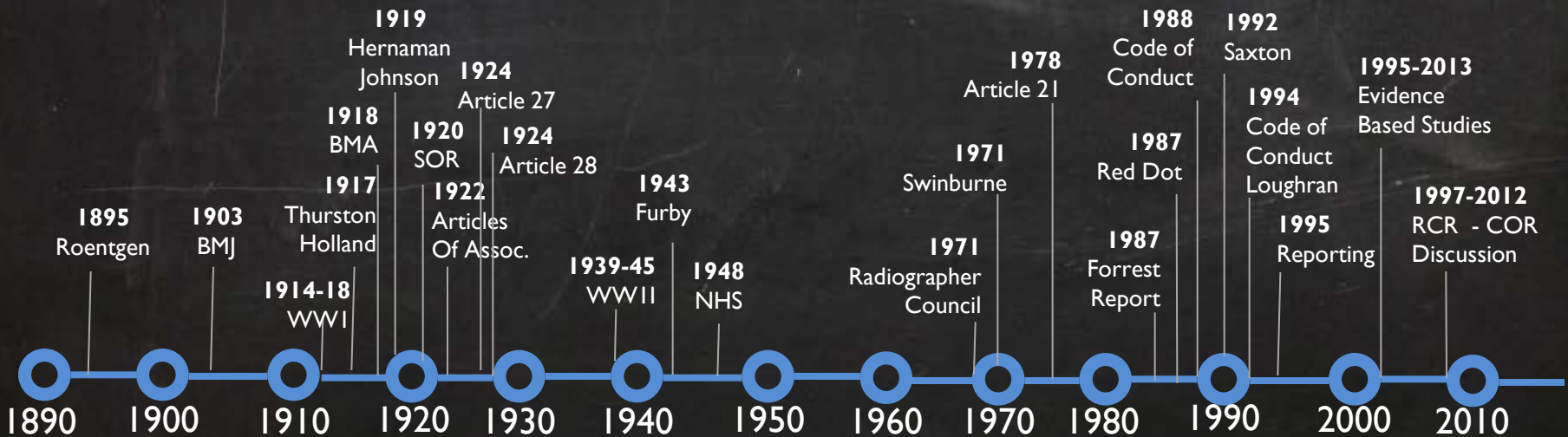
“The Development Of A Curriculum
A Case Study of Six Centres Providing Courses In
Radiographic Reporting”



Origins of the Reporting Radiographer

2009
K Piper, A Paterson
Initial image interpretation of appendicular skeletal radiographs:
A comparison between nurses and radiographers

The COR sets out its expectation that image interpretation will become a core competence of radiographers by 2010 with the result that written initial interpretation reports will have replaced ambiguous signalling systems in the accident and emergency department



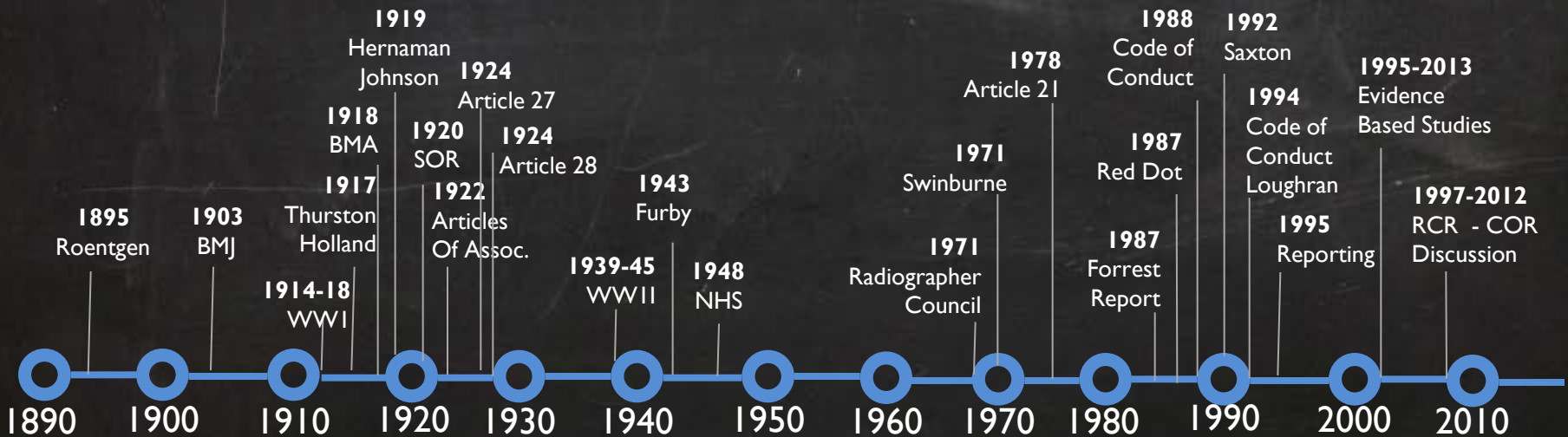
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2010

RCR 'Medical Image Interpretation by Radiographers'

- A purely descriptive report does not amount to 'interpretation'. The value of such a descriptive report is limited and there is no evidence that it is cost-effective, as referrers would then require a radiologist to examine the relevant images in order to issue a clinically relevant report.

- Measurements and factual observations based on pattern recognition do not constitute medical image interpretation. However, in some situations, these can provide referrers with useful information

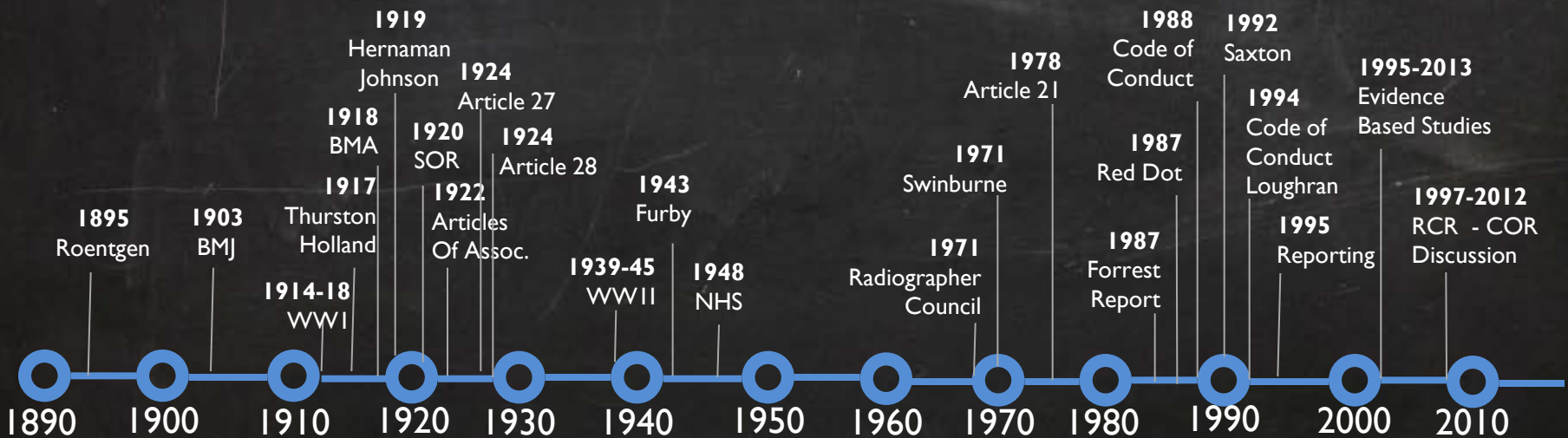


Origins of the Reporting Radiographer

2010

COR 'Medical Image Interpretation by radiographers'

- First, it has no business pronouncing on the roles and practice of radiographers;
- Second, it is inaccurate, and,
- Third, it is based on opinion rather than evidence. Indeed, it offers no evidence to support its view that employing reporting radiographers carries 'substantially greater risks for healthcare organisations than employing radiologists'

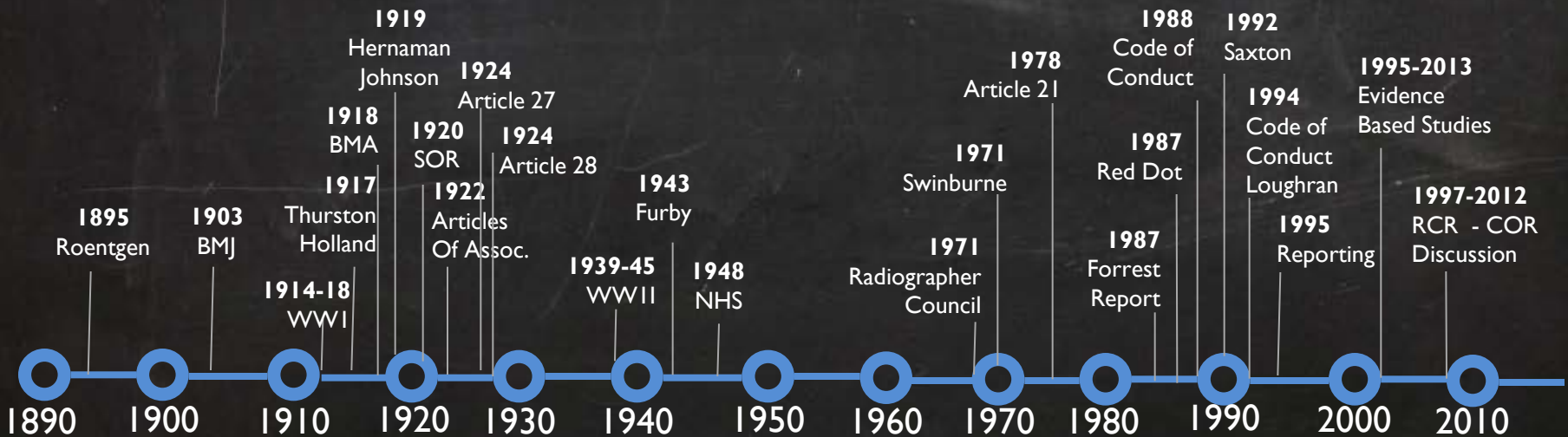


Origins of the Reporting Radiographer

2011

RCR 'Standards and Recommendations for Reporting'

- Standard 3. All imaging investigations are best reported by a radiologist.
- Radiologists are medically qualified, have undergone a two-year minimum period in postgraduate medicine and surgery and have undergone a further minimum period of five years' postgraduate training in imaging science, theory and interpretation.
- They are, therefore, the best qualified to provide clinically relevant radiological reports themselves or, when appropriate, by delegation to role-extended practitioners [radiographers] working in teams with radiologists.



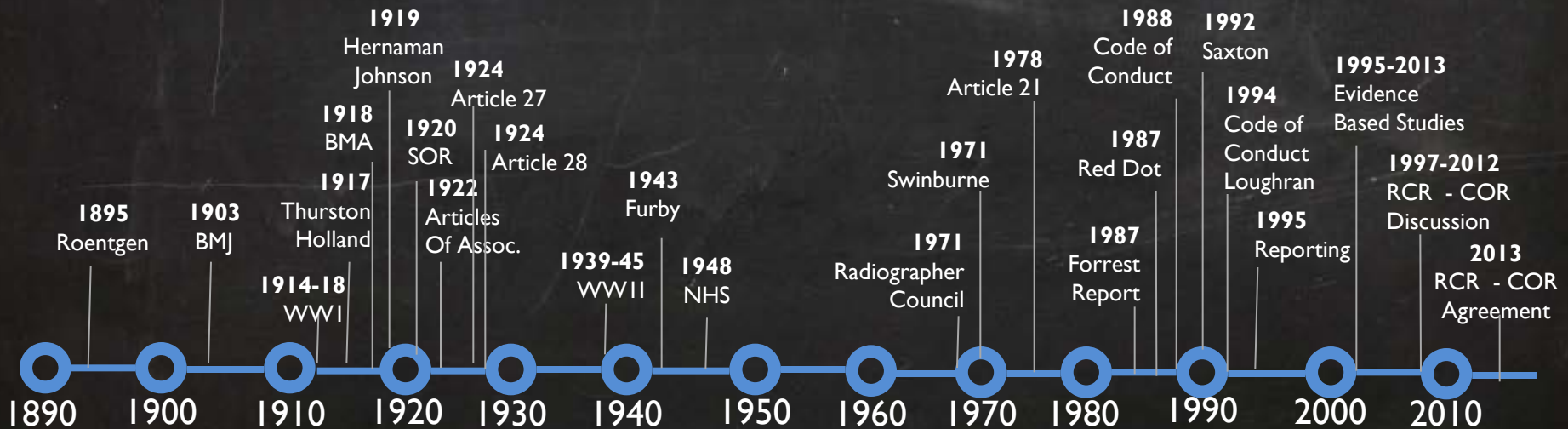
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2012

SOR and RCR 'Team working in Clinical Imaging'

2013

COR 'Preliminary Clinical Evaluation and Clinical Reporting by Radiographers'



Short communication

Accident and Emergency and General Practitioner plain radiograph reporting by radiographers and radiologists: a quasi-randomized controlled trial

S BREALEY, M D G KING, MICHAEL FRIDGINGER, FRANK M T J CROWE, MICHAEL FRICK,
T CRAWFORD, DOB, MRS L FORD, DOB, MRS N G WARNOCK, MICHAEL FRICK,
FR A J MANNION, MICHAEL FRICK and S ETHELL, DOB

From the Department of Radiology, St James's Hospital, Dublin, Ireland

Available online at www.sciencedirect.com

REVIEW ARTICLE

Radiographer reporting in the nuclear medicine department: a learning curve?

L Elliott, DCR(R), DR, Supervisor Radiographer

Radiological Imaging Department, Larimer Site, Belfast City Hospital, Lisburn Road, Belfast

An evaluation of radiographer performed and interpreted barium swallows and meals

E.E. Judson^a, J.M. Nightingale^{b,*}

^aRadiology Department, City Hospitals Sunderland NHS Foundation Trust, Sunderland, UK; ^bDiagnostic Imaging Research Programme, School of Health Care Professions, University of Salford, UK

Received 29 January 2009; received in revised form 17 April 2009; accepted 28 April 2009

Aim: To determine whether radiographers are able to perform and interpret barium swallows and meals to acceptable standards.

MATERIALS AND METHODS: A retrospective audit was performed of all radiographer-managed (RM) periods in an acute hospital. Descriptive statistics were used to analyse patient demographics, radiological accuracy, and imaging findings. Radiographer reports were compared with radiologist reports assumed to meet standards, and correlated with patient outcomes via electronic record searches and case-note scrub analysis. Sensitivity and specificity were calculated.

RESULTS: Three radiographers performed a total of 762 RM in the 4-year audit period, including a variety of case mix. Only 13 (1.7%) cases were abandoned due to technical reasons, with all other eventual results being satisfactory. Although radiologist case mix was initially variable, following the introduction of modern equipment they remained consistently within the national and regional diagnostic reference ranges. Case notes verified the majority of the radiographer reports, with the most experienced radiographer reporting 230 cases (4%). Follow up of patient outcome was possible in 953 cases. The overall radiologist based on the 933 cases was 95.9% sensitivity, 95%, and specificity 98.9%.

CONCLUSIONS: Appropriately trained radiographers are able to perform and interpret BM examination to acceptable standards.
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Introduction

Radiographers have developed their role in gastro-intestinal (GI) radiology since the 1960s, with radiographer-managed double-contrast barium meals (DCBM) now being firmly embedded within GI services across the UK. However, not all radiographers have developed their practice to include radiographer-managed barium swallows and meals (BSM).¹ The possible reasons for this include: a perceived lack of need for service change; increasing radiologist capacity as more radiologists enter the UK National Health Service

(NHS); a perceived increase in complex procedure when compared to a DCBM; a financial reward, when radiographers graded at advanced practitioner level, published evidence demonstrating the effectiveness of this role may also be linked with general acceptance of this practice across the College of Radiographers (CoR) which should be sought,² and the current role of the results of an extensive audit of its performance (BSM) at one large hospital analysis of the results we determined radiographers can perform and interpret to an acceptable standard.

Literature review

Rate development in radiography began in the 1990s driven by the shortage of

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An evidence based protocol for peer review of radiographer musculoskeletal plain film reporting

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Diagnostic accuracy of radiographer reporting of computed tomography colonography examinations: A systematic review

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AIM: To determine the accuracy of radiographers red dot or triage of accident and emergency (A&E) radiographs in clinical practice.

MATERIALS AND METHODS: Eligible studies assessed radiographers red dot or triage of A&E radiographs in clinical practice compared with a reference standard and provided accuracy data to construct 2 × 2 tables. Data were tested on study eligibility and characteristics, quality, and accuracy. Pooled sensitivities and specificities and chi-square tests of heterogeneity were calculated.

RESULTS: The red dot and triage studies were eligible for inclusion. Radiographers' red dot of A&E radiographs in clinical practice compared with a reference standard is 0.87 (95% confidence interval (CI) 0.85-0.89) and 0.90 (0.89-0.92) sensitivity and specificity, respectively. Radiographers' triage of A&E radiographs of the abdomen is 0.90 (0.89-0.92) and 0.94 (0.93-0.94) sensitivity and specificity, respectively, and for chest and abdomen is 0.78 (0.74-0.82) and 0.91 (0.89-0.92). Radiographers' red dot of dental A&E radiographs without training is 0.71 (0.62-0.79) and 0.76 (0.70-0.82) sensitivity and specificity, respectively, and with training is 0.91 (0.73-0.87) and 0.95 (0.93-0.97). Pooled sensitivity and specificity for radiographers without training for the triage of dental A&E radiographs is 0.89 (0.88-0.91) and 0.93 (0.92-0.94), and with training is 0.91 (0.89-0.94) and 0.95 (0.93-0.96).

CONCLUSIONS: Radiographers red dot or triage of A&E radiographs in clinical practice is affected by body area, but not by training.
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Accuracy of radiographers red dot or triage of accident and emergency radiographs in clinical practice: a systematic review

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AIM: To determine the accuracy of radiographers red dot or triage of accident and emergency (A&E) radiographs in clinical practice.

MATERIALS AND METHODS: Eligible studies assessed radiographers red dot or triage of A&E radiographs in clinical practice compared with a reference standard and provided accuracy data to construct 2 × 2 tables. Data were tested on study eligibility and characteristics, quality, and accuracy. Pooled sensitivities and specificities and chi-square tests of heterogeneity were calculated.

RESULTS: The red dot and triage studies were eligible for inclusion. Radiographers' red dot of A&E radiographs in clinical practice compared with a reference standard is 0.87 (95% confidence interval (CI) 0.85-0.89) and 0.90 (0.89-0.92) sensitivity and specificity, respectively. Radiographers' triage of A&E radiographs of the abdomen is 0.90 (0.89-0.92) and 0.94 (0.93-0.94) sensitivity and specificity, respectively, and for chest and abdomen is 0.78 (0.74-0.82) and 0.91 (0.89-0.92). Radiographers' red dot of dental A&E radiographs without training is 0.71 (0.62-0.79) and 0.76 (0.70-0.82) sensitivity and specificity, respectively, and with training is 0.91 (0.73-0.87) and 0.95 (0.93-0.97). Pooled sensitivity and specificity for radiographers without training for the triage of dental A&E radiographs is 0.89 (0.88-0.91) and 0.93 (0.92-0.94), and with training is 0.91 (0.89-0.94) and 0.95 (0.93-0.96).

CONCLUSIONS: Radiographers red dot or triage of A&E radiographs in clinical practice is affected by body area, but not by training.
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Introduction

Accident and Emergency (A&E) departments are integral to the front-line diagnosis of patients in the UK National Health Service (NHS). Hundreds of thousands of patients pass through A&E departments each year and are often for a radiographic examination. Delay in an accurate and timely report may affect A&E clinicians' management plans, patient outcome, and the need for more expensive investigations.¹

The subject of non-medically qualified staff reporting radiographs has been debated and

contested almost since the discovery of X-rays by Roentgen in 1895.² Historically, the reporting of radiographs has been the domain of radiologists. It was Swanton, in the early 1970s, who suggested that a radiographer could indicate to the referring clinician whether a radiograph was "normal" or "abnormal" without a prolonged and complex training.³ The aim of this proposal was to address the shortage of radiologists and free them to perform other more complex investigations, whilst simultaneously improve radiographers' job satisfaction and enhance their professional standing. The A&E initiative should also be of value to an A&E department where the referring clinician is the

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MRI reporting by radiographers: Findings of an accredited postgraduate programme

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Radiographers and trainee radiologists reporting accident radiographs: A comparative plain film-reading performance study

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Accuracy of radiographer plain radiograph reporting in clinical practice: a meta-analysis

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Observer agreement in the reporting of knee and lumbar spine magnetic resonance (MR) imaging examinations: Selectively trained MR radiographers and consultant radiologists compared with an index radiologist

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ABSTRACT
Agreed: To assess agreement between trained radiographers and consultant radiologists comparing an index radiologist when reporting on magnetic resonance imaging (MRI) examinations of the knee and lumbar spine and to measure the subsequent effect of education on their patient management

Origins of the Reporting Radiographer

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