UNIVERSITY OF OXFORD

Townsend Building Conservation Plan

April 2012
Building No. 147

Oxford University

Estates Services

First draft September 2010

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CONTENTS

1 INTRODUCTION

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1 INTRODUCTION

The Townsend Building of the Clarendon Laboratory (originally the "Second" or "New" Electrical Laboratory) was designed by Sir Thomas Graham Jackson, and was constructed between 1908 and 1910. It is a Grade II listed building with significance attributed to its position as a fine example of the "Anglo-Jackson" style that came to dominate Oxford in the late 19th/early 20th Century, and as the setting for H.G.J. Moseley's pioneering research into the atomic structure of elements. The Townsend Building was one of Jackson's last commissions at Oxford, and his biographer, Whyte, describes it as: 'the culmination and quintessence of his career.'[1] It was originally a free-standing building but now forms part of a "Physics complex" in the area.

1.1 Purpose of the Conservation Plan

The University has an unrivalled portfolio of historic buildings, of which it is rightly proud. It has traditionally taken a thorough, holistic approach to building conservation, seeking to understand all the varied factors that make historic buildings significant to their diverse stakeholders, and using this to inform necessary change. It has become clear that this approach is vital to the conservation culture of an institution where so many of its historic buildings that are valued for their function also have extensive historical or architectural significance. This Conservation Plan represents the continuation of this tradition of seeking to understand what makes the University's buildings cherished assets, and of seeking ways to conserve these most important features for the enjoyment of future generations.

The success of this approach is such that it has now become codified in government policy: First in March 2010's *Planning Policy Statement* 5: *Planning for the Historical Environment* then in its replacement, March 2012's *National Planning Policy Framework* (hereafter: NPPF). NPPF provides useful guidance on approaching the conservation of heritage assets, and postdates the University's existing literature. NPPF defines a heritage asset as:

'*A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).*'

This designation clearly applies to the Townsend Building.

The purpose of this Conservation Plan is to update the Townsend Building's conservation policy to take into account the new guidance provided by NPPF. It will be of use both for informing responsible regular maintenance and in the preparation of future planning applications, as specified in NPPF paragraph 128.

[1] Whyte, W., *Oxford Jackson: Architecture, education, status, and style,* 1835-1924 (Oxford, 2006) 121.

The Conservation Plan should form the basis for the Townsend Building's Conservation Policy and exists as part of an ongoing process. It will be renewed and updated at least every five years or following any major alterations or legislative changes.

1.2 Scope of the Conservation Plan

This Conservation Plan will cover the interior and the exterior of the Townsend Building, a single three-storey building of red-orange brickwork and ashlar stonework. It is located in a set-back position at the north of Park's Road in Oxford (see **Figure 1** below).

The plan is not a catalogue and to facilitate its practical use will concentrate only on the most vulnerable aspects of significance, suggesting how they should be approached and conserved in the future. A brief list of the most significant architectural features can be found in **Appendix 3** and should be referred to when planning any repair or alteration work.

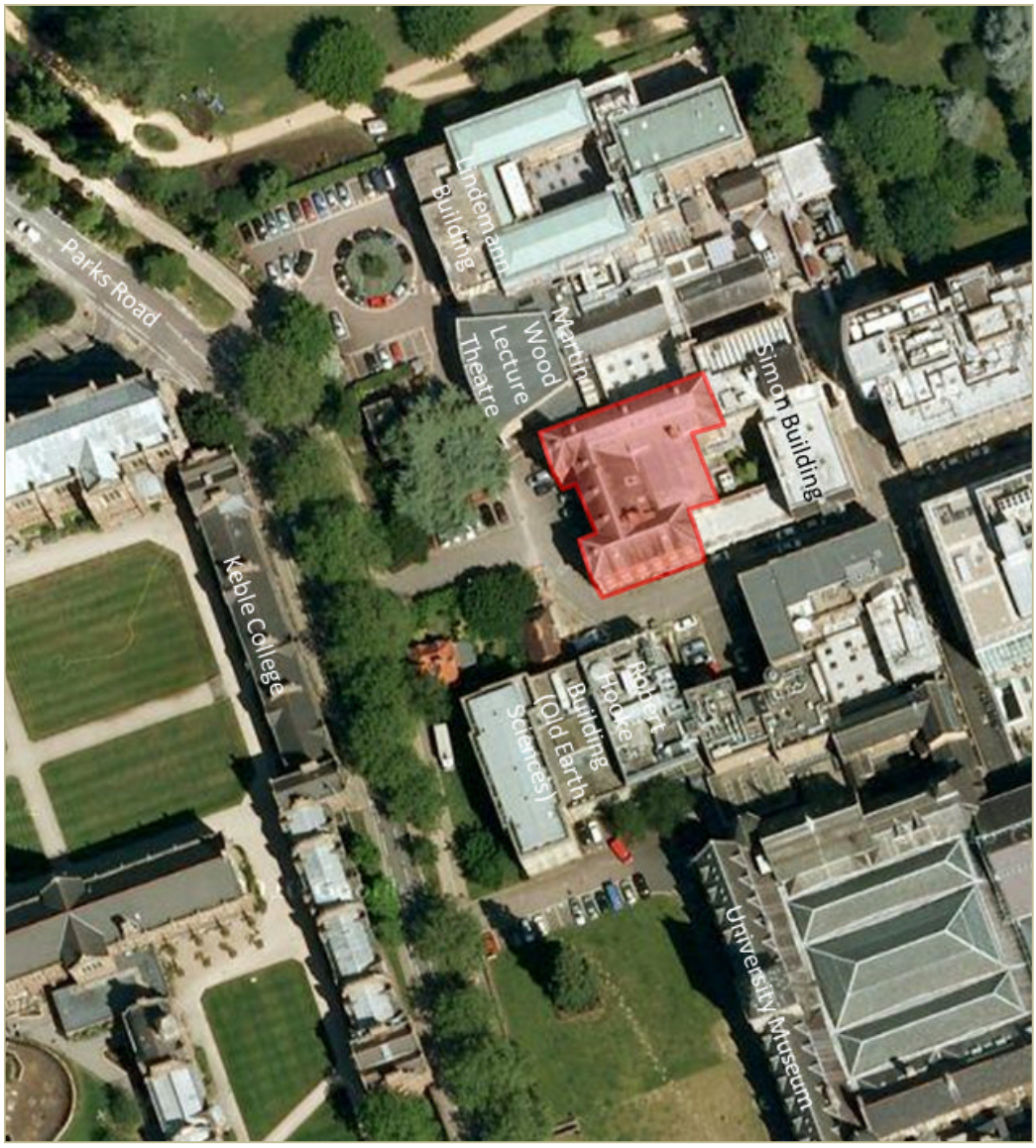

Figure 1. Satellite image of the Townsend Building (outlined in red) and the surrounding area, orientated with north at the top of the image

1.3 Existing Information

A Conservation Plan has not previously been produced for the Townsend Building. It is one of Sir Thomas Jackson's less famous buildings, and there is little documentation directly relating to it, though it has achieved limited mention in general accounts of his work.

The original 2008 listed building description (**Appendix 1**) is the logical starting point for this plan as it lists the heritage asset's main features and briefly assesses its architectural significance.

Various planning applications have been made throughout the building's history, providing a good indication of the changes that have occurred over time. The Oxford University Archives hold the original designs and relevant correspondences from the early life of the building (**Appendix 5** and **Annexe 3**).

There are several published books and articles that examine Thomas Graham Jackson and 19th-century architecture in Oxford. None cover the Townsend Building in detail, but they provide a key resource for studying the importance of Jackson and his work in Oxford.

The plan draws on statutory guidance from NPPF prepared by HM's Department for Communities and Local Government in March 2012.

1.4 Methodology

The Conservation Plan is a document that assesses the current and predicted conservation needs of the Townsend Building and attempts to address them with a view towards maintaining or increasing the significance of the heritage asset. Its formulation to supersede any existing literature is a response to the requirements of NPPF, and it is prepared in accordance with the policies contained therein.

The building is currently called the Townsend Building of the Clarendon Laboratory, but because of its changing name over time will be referred to as the "Townsend Building" or the "Electrical Laboratory" depending on which title is most relevant to the period under discussion.

1.5 Constraints

The Townsend Building and its environs are subject to various constraints imposed by Oxford City Council:

- CP.3 – Limiting the Need to Travel: New development will be limited to accessible locations on previously developed sites.

- HE.9 – High Building Areas: Planning permission will not be granted for any development within a 1,200 metre radius of Carfax which exceeds 18.2m in height, except for minor elements of no bulk.

- TR.3, TR.11, TR.12 – Car Parking Standards: The City Council will not allow any significant increase in the overall number of car-parking spaces in the Transport Central Area or development that provides an inappropriate level of car-parking spaces. It will attempt to reduce the level of non-residential car parking.

- The City of Oxford Smoke Control Order No. 2: It is an offence to emit smoke from the chimney of a building, from a furnace, or from any fixed boiler if located in a designated smoke control area.

2 UNDERSTANDING THE SITE

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2 UNDERSTANDING THE SITE

2.1 History of the Site and University[2]

The site of Oxford has had sporadic settlement since the Neolithic period. Bronze Age barrows have been found in the University Parks (linear barrow cemetery) and in the Science Area (double-ditched barrow) itself. Oxford has had a continuous history of occupation since at least the 8th Century AD. The University of Oxford itself has a long-standing tradition of exceptional education. Able to trace its roots to the 11th Century, it is known to be the oldest university in the English-speaking world.

The site upon which the Townsend Building now stands is situated in the northeast of the City. This area was developed in the 19th Century, notably with the construction of Keble College on the western side of Parks Road in 1868-70.

The 91-acre site now occupied by the University Museum, the Science Area (including the site of the Townsend Building), and the University Parks was purchased by the University from Merton College in stages between 1853 and 1864. The first plans for the University Parks were presented to the University in June 1863, but these were rejected, and it was not until 1865 that £500 was allocated for the purchase of trees and shrubberies. Even before this point the space allocated to the Parks was diminished by the allocation in 1853 of 8 acres in its southern portion for the University Museum (1855-60), and this southern expanse underwent near-continuous development throughout the second half of the 19th Century.

The University Museum was soon extended with: the construction of the original Clarendon Physics Laboratory (now embedded within the Earth Sciences building) on its northwest side in 1867-69 (extended in 1946-58); the construction of the Pitt River's Museum on the east in 1885-86; the addition of Jackson's Radcliffe Science Library to the south in 1898-1900 (extended in 1933-34); and the extension of the Department of Zoology (now housing Atmospheric Physics) and Stevenson and Redfern's Morphology Laboratory to the north in 1898-1901.

Further science buildings were constructed in this precinct from the last quarter of the 19th Century. Many of these were originally free-standing, but continued development has created an increasingly interconnected science precinct in the area. The near-continuous history of development in the area has created a crowded space at the south of the Park precinct. It is the main centre for the study of sciences within the University, and is now known as the University Science Area.

2.2 Construction and Subsequent History of the Townsend Building[3]

The Clarendon-Townsend building was constructed 1908-10 to a design by Sir Thomas Graham Jackson. By this point Jackson was the nation's most prominent architect, secure in his position and unconstrained in his expression. Jackson designed

[2] **Annexe 1** provides a history of the early development of the University Science Area.
[3] A general chronology of the site can be found in **Appendix 2**, and **Annexe 2** provides a brief history of the use of the building.

the building in distinctive red-orange brick and ashlar stonework, in a progressive style described by commentators as "Neo-Georgian," [4] "Wrenaissance," [5] and "William and Mary to Queen Anne."[6] Jackson's original plans can be seen in **Appendix 5.**

Immediately following its inauguration in 1910 the Electrical Laboratory became an important practical working space, and was maintained as such. The building's external wood and iron work were repainted in 1920, and the boiler was replaced in 1921. The ceiling beams began to split in the 1920s and the ceiling eventually started to leak; however, discounting the erection of a partition wall in the dark room in 1933 and the limited installation of Alternating Current in 1935 (in areas not already supplied with Direct Current), the building continued to fulfil its function without major alteration throughout this period.

Lindemann's success in developing the status of Physics at Oxford resulted in the opening of the second Clarendon Laboratory directly to the north of the Electrical Laboratory in 1939. The construction of an access doorway opposite the entrance to the workshop of the Clarendon Building in 1946 facilitated the integration of the use of the two buildings. Whilst a positive development in the study of Physics, the construction of the Clarendon Laboratory obscured the grand view of the northern elevation of the Electrical Laboratory from across the Parks (**Appendix 4**), relegating the elevation to an overlooked position, and eventually to being completely obscured by further development.

Elements of the building had been converted from Direct Current to Alternating Current in 1935, but in 1948 the University Chest saw fit to make available £2,131.2.3 for the rewiring of the entire Electrical Laboratory to Alternating Current.

Some floors, notably in the ground-floor of the southern wing, were replaced in the 1970s, whilst many of the internal doors were replaced in the 1980s.

The Electrical Laboratory remained relatively isolated into the latter half of the 20th Century. It was extended with the construction of the Simon Building to its eastern (rear) end during the 1960's, but this remained the only external addition when Pevsner produced his architectural survey of Oxfordshire in 1974.[7]

Development around the building has been rapid since then and, as is clear from the aerial view in **Figure 1** and from **Appendix 4**, the Townsend Building has been effectively absorbed into the Clarendon Laboratory buildings around it.

[4] Tyack, G., *Oxford: An Architectural Guide* (Oxford, 1998) 282.
[5] Whyte, W., *Oxford Jackson: Architecture, education, status, and style,* 1835-1924 (Oxford, 2006) 121.
[6] Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974) 278.
[7] Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974) 278.

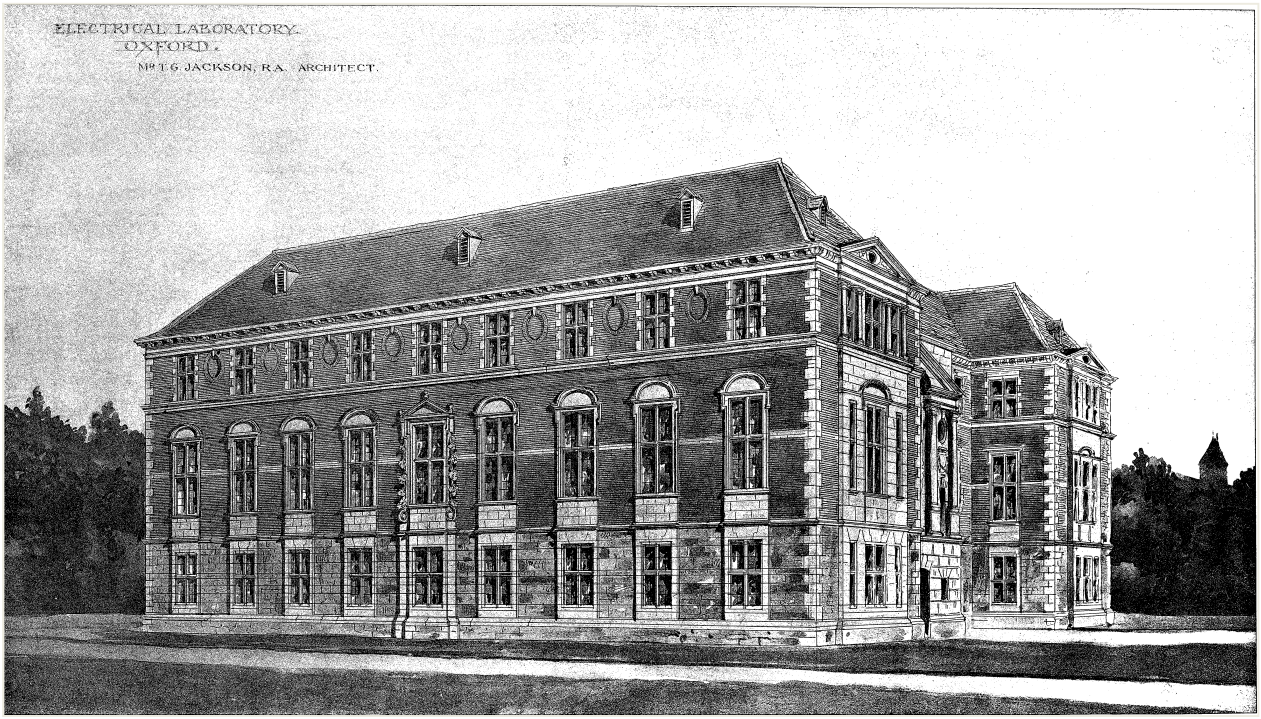

Figure 2. Lithograph of western elevation of Jackson's design published in *The Builder*, 8th May 1909. Note the embellishment on the central window, which can also be seen in Figure 3.

Figure 3. Photograph of northern elevation, January 2007. The ground floor is obscured by later additions. The embellished central window from Figure 2 can be identified third from the left.

Gradual construction physically connected the Lindemann (Clarendon Laboratory) and Townsend buildings, and this was formalised by the construction of the Martin Wood Lecture Theatre in between the two (replacing the previous workshop building) in 2000 (see **Appendix 4**). The construction connecting the two buildings has now obscured the once impressive northern elevation of the Townsend Building, to the extent that only the upper storeys are uncovered, and these are only visible from the roof of the connecting buildings (**Figure 2** and **Figure 3**). Internally the Townsend Building has been extensively subdivided and partitioned from the second half of the 20th Century onwards, with small laboratory spaces replacing the wide open lecture spaces of the original design (**Appendix 5**). Notably the central lecture theatre (which now houses the Institute of Experimental Photonics) originally spanned the first and second floors (**Appendix 5**), but was horizontally subdivided to create two levels in 2002. Only the entrance hall and the monumental double staircase remain substantially unchanged. **Figure 4** shows the subdivision and addition that has occurred across the ground floor of the building since the original construction.

Figure 4. Current CAD plan of the ground floor of the Townsend Building (red and blue) with the original design overlain in black, with dotted lines denoting where original material has been removed. Orientated with north to the left of the image.

The nature of Physics as a technologically-dependant subject means that the requirements of the building have changed substantially throughout its 100 years of use, resulting in substantial internal alteration; however, this has enabled the building to continue to function as an important constituent element of the Physics Department, with two of the six Physics sub-departments (Atomic and Laser Physics and Condensed Matter Physics) being spread between the interconnecting Townsend, Lindemann, and Simon buildings which together now form the Clarendon Laboratory. Since 2002 the Townsend Building has housed the Institute of Experimental Photonics (part of the sub-department of Atomic and Laser Physics) in the eastern quadrant of the first and second floors of the main building, connected by a new internal spiral staircase at the rear.

Future plans will bring the ground floor of the southern wing closer to its original layout by removing all the later partitioning, and creating two long, open spaces connected by a partition door.

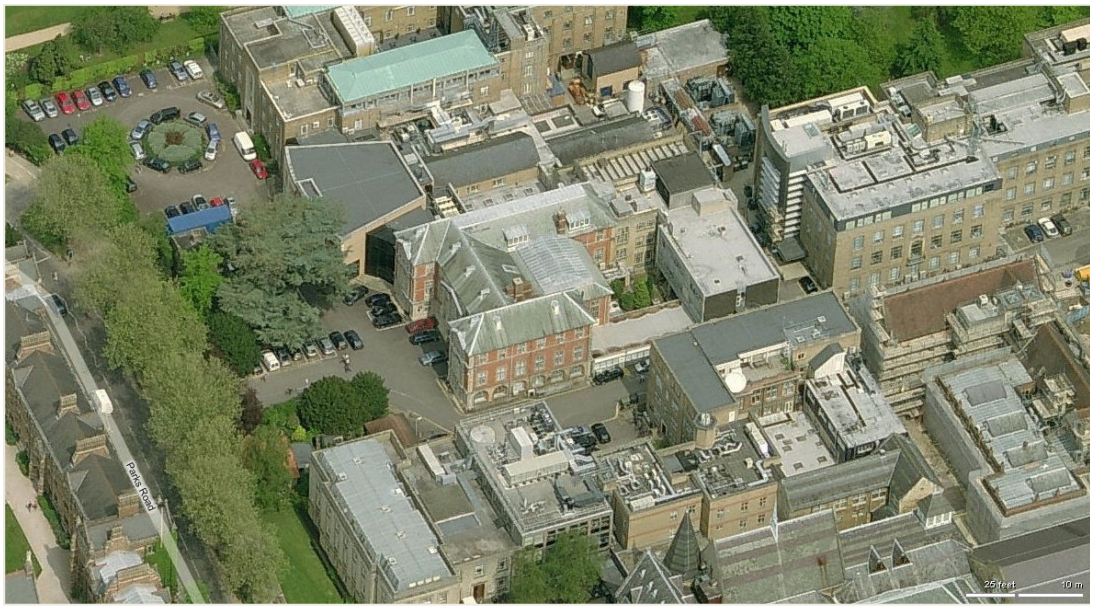

Figure 5. The Clarendon-Townsend Building in 2010

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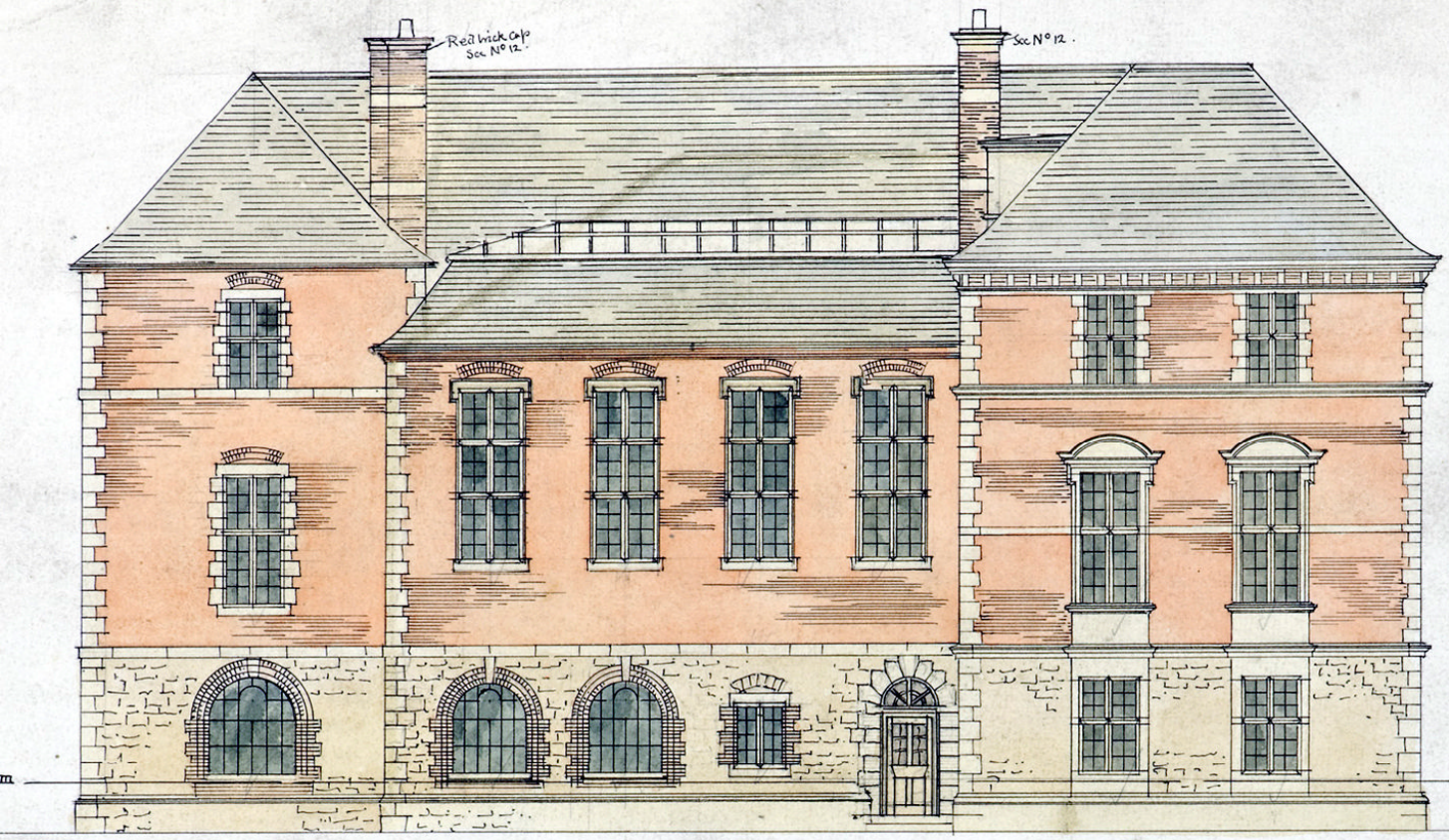
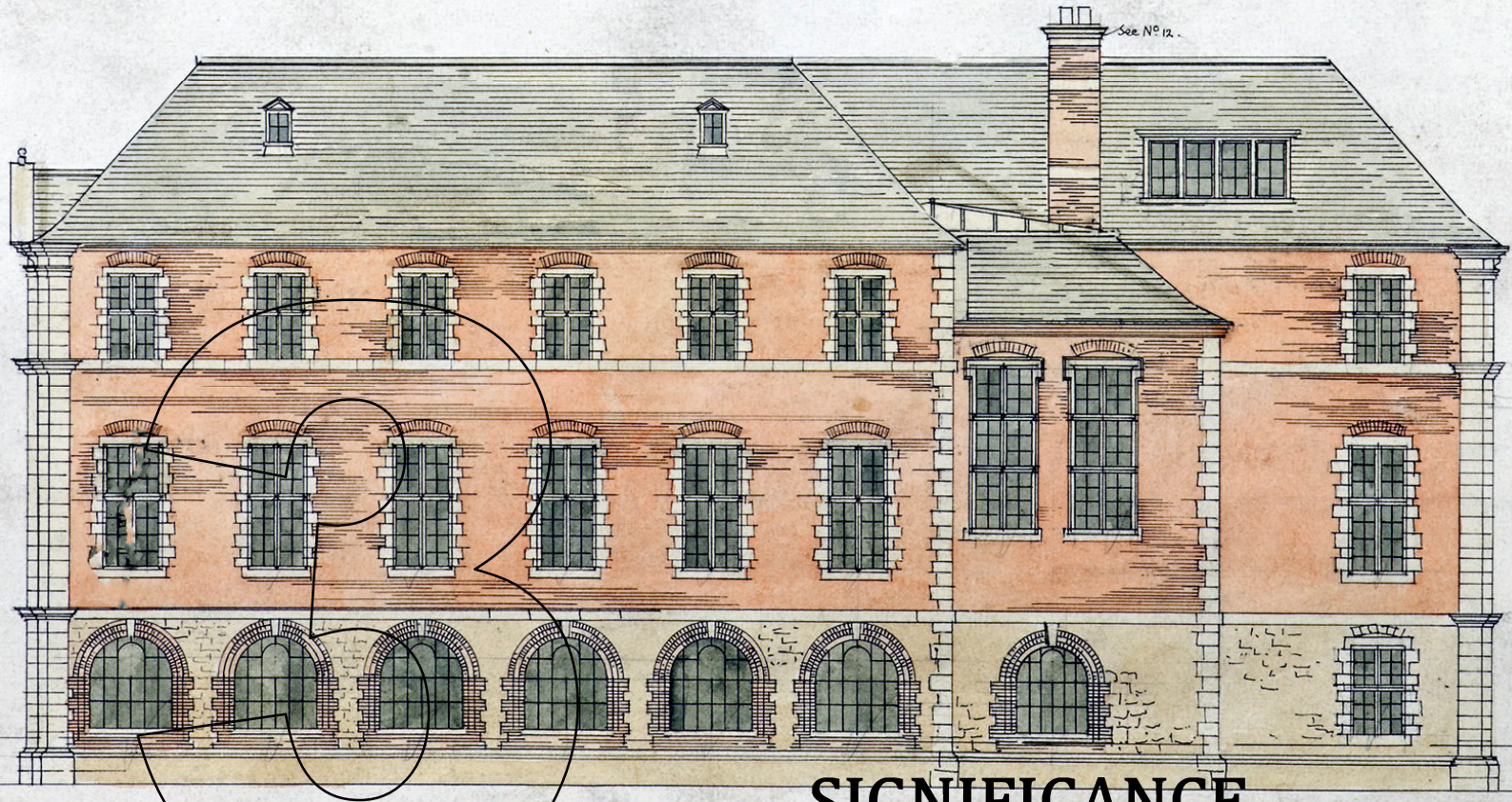


EAST ELEVATION .



SOUTH ELEVATION .

SIGNIFICANCE

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3 SIGNIFICANCE OF THE TOWNSEND BUILDING

NPPF paragraph 128 specifies that in assessing planning applications:

'*Local planning authorities should require an applicant to provide a description of the significance of any heritage assets affected including any contribution made by their setting*.'

The significance of the Townsend Building has been publically recognised by its designation as a Grade II Listed building in 2008 (see **Appendix 1**).

3.1 Significance as part of the Oxford North Ward, the University Parks area, and the University Science Area

The Townsend Building contributes significantly to the character of the north of Carfax Ward, Parks Road, and the University Science Area. Barely away from the splendour of Broad Street, the northern expanse of Parks Road forms a pleasant, tree-shadowed precinct, marred only by its often-busy motor traffic. The austere majesty of its grand 19th and early 20th-century buildings creates a character of serious academic rigour, venerable rather than pompous.

Other than the University Museum (and its extensions) (Grade I listed), the University Museum Lodge (Grade II listed), and Keble College (Grade I listed) across Parks Road to the west, the Townsend Building antedates the surrounding buildings. It was designed as a free-standing structure, set back and distinct from those around it. The colouring of the bricks is not at odds with that of Keble to the west, but there was no attempt made at matching with the much-yellower stone of the University Museum to the south. Despite the Doric columns and entablature of its western elevation, the Electrical Laboratory seems simple and understated compared to the Ruskinian, Gothic majesty of Deane and Woodward's University Museum. As a member of the University's "progressive party," Jackson's work was consciously distinct from conservative Ruskinian principles;[8] however, whilst the designs remain disparate they are not confrontational, and the Electrical Laboratory's grand scale, symmetrical front elevation, regular brickwork, and dressed stone window surrounds and quoins do, on balance, complement the University Museum's design. Equally, the unashamed neo-classicism of the Townsend Building's western elevation somehow does not jar with the Victorian Gothic elevations of Keble, the most dominant structure in the area, to the west. This may be because Keble, with its bright red, white, and blue brick, accompanied by its imposing mass, is such a distinctive feature that its character cannot be easily distracted from by surrounding structures.

The Townsend Building is designed in the neo-Classical style, its form drawn from the concept of the stately country home. Jackson's design consciously rejects the conspicuous ornamentation of the Gothic, relying upon a concentration of monumentality on the main elevation and simple (and very much minimal) ornamentation elsewhere. Keble, on the other hand, embraces the Gothic style. It is

[8] Whyte, W., *Oxford Jackson: Architecture, education, status, and style,* 1835-1924 (Oxford, 2006) 89-92, 100-103

not constructed in a Ruskinian Gothic, in the style of the University Museum, but rather in a bright, highly-ornamented style reminiscent of the Oxford Movement and the very High Anglicanism that it represented. It is Gothic as an expression of radicalism, a connotation long lost by the early 20th Century: by which time it had become a style representative of conservatism within the University. Jackson's choice of neo-Classical for the Townsend Building is a symptom of his long-held sympathies towards the progressive movement within the University, by this point a dominant force. Whilst the designs do not clash, it is clearly distinct from the Gothic designs of Keble and the University Museum, and the conservative forces within the University that the Gothic style had come to represent.

The later buildings around the Townsend Building are surprisingly sympathetic to it. The Lindemann Building (1939) is remarkably simple yet elegant. The simplicity of its front (western) elevation, two symmetrical wings flanking a rectangular tower, reads as a re-rendering of the University Museum minus the Gothic embellishments, applying the form outside the style. Its colouring is distinct from the Townsend Building but relatively bland and unobtrusive. The Martin Wood Lecture Theatre (administratively part of the Lindemann Building) now connects the front elevations of the Townsend and Lindemann buildings. Panels of dark red brick on the upper storey of this building are designed to match the colouring of the Townsend building, whilst a long, vertical central window echoes that of the Lindemann Building. At both sides the Martin Wood Lecture Theatre connects with the front elevations of the older buildings via wide panels of darkened glass, which creates an illusion of separation, giving the impression of three distinct but complementary buildings. The Simon Building, to the rear of the Townsend Building, is aesthetically obtrusive, but is fortunately not visible from the front of the Townsend Building so does not detract from the character of the area.

If approaching the Townsend Building along Parks Road from the south one passes the University Museum on the right, which is in a set back position with an open, monumental approach. In comparison, the Townsend Building's setting lacks a certain visual impact, engendering a sense of private rather than public monumentality. Keble dominates the western side of Parks Road, with its grand, ornamented Gothic elevations overshadowing the road from the University Museum as far north as the Electrical Laboratory. The approach to the Townsend Building is framed by the Museum Lodge (Grade II listed) in the southwest and by black metal railings and abundant foliage along the western perimeter. The lodge acts as a boundary to the setting, with the fencing and foliage acting to hide the building until one is directly before it; at this point one is confronted by a long narrow drive leading to the grand Doric centrepiece of the building's western elevation (see **Cover**). The Martin Wood Lecture Theatre remains obscured by the tree cover and the illusion is created of the Townsend Building as a free standing structure, in conformity with its original design. The long driveway down to the grand entrance creates the character of a stately mansion, which adds substantially to the drama and character of the area, immediately drawing the eye of passersby.

The Townsend Building is not by itself the greatest contributing factor to the character of the area, that honour must go to Keble College (followed closely by the University

Museum); however, it remains a significant contributor to the setting's character as an area of calm, unselfconscious grandiosity and academic rigour.

3.2 Architectural Significance

Externally, the Townsend Building is constructed from bright red-orange brickwork with detailed and decorative ashlar stonework. Internally, the main hallway and staircase also include detailed stonework in the form of archways and the main twin stone staircase rising up through the building. This stairway incorporates stone screens, wrought ironwork, and columns. The external elevations and internal main staircase were considered the building's most significant features in its elevation to Grade II Listed status. The internal rooms of the building are otherwise utilitarian in nature and have been altered and adapted as necessary over the years to accommodate laboratories and offices in order to provide a functional and practical use for modern research within a building designed in the early 20th Century.

3.2.1 Sir Thomas Graham Jackson

The Townsend Building was designed in late 1908 by Sir Thomas Graham Jackson, Bart., R.A. During his lifetime Jackson was one of the most influential architectural writers alive, and he is arguably the most influential architect in Oxford's history. Despite international fame and widespread acclaim from his contemporaries, he was largely discounted for perhaps half a century following his death in 1924; however, recent decades have seen a renewal of popularity and a new-found understanding of his contribution to the development of modern Oxford and of architecture in general.

Jackson was born in 1835 and was educated at Brighton College, before reading Greats at Wadham College, Oxford. He graduated with Third Class Honours in 1858, and entered Sir Gilbert Scott's architectural practice at 20 Spring Gardens, London, in October of the same year. After falling out with Scott (after an anonymously-penned critique was wrongly attributed to him) he opened a shared practice in 1861 and his own practice in 1864, exhibiting at the Royal Academy for the first time in 1873. In 1865 he was elected a full Fellow of Wadham College. He wrote and published widely, and his *Modern Gothic Architecture* (London, 1873) was the most influential architectural work of the period.

The most important event for Jackson's relationship with Oxford came in 1876 when he won the competition to design the new Examination Schools. This represented a victory for the University's "progressive party," led by Benjamin Jowett (Master of Balliol from 1871 to his death in 1893), of which Jackson was a firm supporter: 'My sympathies were all with the party of progress.'[9]

The architectural historian William Whyte has argued that Jackson's 1876 commission, with its style so distinct from the Ruskinian Gothic ideal prized by the conservative factions, was intended as a clear indication of change:

[9] Jackson, T.G., *Recollections* (Jackson, B.H., ed.; Oxford, 1950) 105.

'*The "Anglo-Jackson" style…* [was] *taken by Oxford's education reformers and used to identify their projects, mark their colleges, and symbolise the reformed university. In the process of reform, architecture was used as a rhetorical device, signifying difference…by their nature they* [the Examination Schools] *represented the needs of the "progressive party": lecturing and undergraduate examination. These aims were completely at odds with the "Researchers" (led by Mark Pattison, Rector of Lincoln College from* 1861*) and the most-conservative "Non-Placet Society" (led by the reactionary James Bellamy, President of St. John's College from* 1871*).*'[10]

Following the success of the Examination Schools, Jackson's contacts amongst the "party of progress" found him continued work throughout Oxford (see **Annexe 4**). He continued to work widely in the city, influencing both Town and University architecture, and when he received his honorary doctorate in June 1911 the Professor of Poetry, John William Mackhail, acclaimed him as the man who: '…might rightly be called…the creator of modern Oxford.'

The Electrical Laboratory remains a fine example of the work of modern Oxford's most significant architect. It was one of Jackson's final commissions in Oxford and represents the continued development of his once radical style, by that point the new orthodoxy in the city. Pevsner describes it as:

'*Red brick and stone dressings, long and symmetrical, William and Mary to Queen Anne in style. The Jackson office was moving with the times.*'[11]

The striking Doric entablature of the main elevation speaks of a mature architect, secure in his position and in the widespread acceptance of his ideas. After his early success with the Examination Schools, much of Jackson's work was with collegiate buildings, which involved fitting his work into existing schemes. In contrast, the Electrical Laboratory remains important as an example of his free-standing later work in Oxford and represents the development of his style over the course of his career.

Regrettably, the northern and eastern elevations have been almost entirely obscured by obtrusive later construction; however the southern and western (the most significant, see **Appendix 1**) elevations remain much as Jackson designed them (see **Section 2.2**) and represent an outstanding example of his work. The brick work is particularly fine, with its regular laying and skilful pointing representing high-quality materials artfully employed by exceptional craftsmen.

3.3 Archaeological Significance

As noted above (**Section 2.1**), the site of the Townsend Building previously formed part of the University Parks, purchased from Merton College between 1853 and 1864. The University Parks and the Science Area have a rich and relatively-continuous history of occupation as indicated by: Bronze Age barrows (late third millennium BC), with evidence for Iron Age infilling of the double-ditched barrow in the Science Area;

[10] Whyte, W., *Oxford Jackson: Architecture, education, status, and style*, 1835-1924 (Oxford, 2006) 89, 90-92.
[11] Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974) 278.

ring ditches suggesting Iron Age settlement; Roman earthworks; a Roman burial and several ditches near the Lindemann Building; mediaeval (post-1066) ridge and furrow, suggesting an intensive agricultural use in this period; Civil War earthworks; and post-mediaeval field boundaries.

The foundations of the Townsend Building will have destroyed any later archaeological material, but fortunately post-mediaeval occupation of the site seems to have been primarily agricultural and of limited significance considering its earlier history. Mediaeval ridge and furrow will also have damaged some of the earlier material (though it is fortunate that the site went out of agricultural usage prior to the advent of the mechanised plough) but, despite the relatively shallow nature of the soil in the area, the long history of occupation makes it likely that some significant archaeological material may be preserved at the lower stratigraphic layers.

3.4 Significance as a laboratory and work space

Oxford has one of the largest and most prominent undergraduate Physics teaching departments in the country, with about 600 undergraduates enrolled at any one time, and 180 graduating each year. Equally it has a world-class research portfolio, with around 150 doctoral students. It was the second largest Physics Department in the country in the latest (2008) Research Assessment Exercise, achieving strong results.

The Clarendon Laboratory is one of the department's most important teaching and research spaces, and the Townsend Building forms an important constituent element of this. The Martin Wood Lecture Theatre has taken the onus for lecture space away from the Townsend Building, but it still provides important laboratory space for both teaching and research. The Institute for Experimental Photonics on the first and second floors is a world-renowned resource. The exact use of the building is not identical to that envisaged by Jackson, nor could it be considering the dynamic nature of Physics as a discipline, but it is still operates with the same aims.

The continued use of this space for the teaching of Physics is vital to the long-term preservation of the building and for the maintenance of its heritage value. The future potential of the building to be used and enjoyed is an important generator of value and provides a continuing strong incentive to maintain the building in a conscientious and informed manner.

The building is not preserved as an historic artefact fixed at a single point in time. It has been extensively altered internally in order to meet the changing needs of its utility. It is a place of work, used on a daily basis by a large number of people with no special interest in its historic provenance, and as such should generally be perceived to provide a high-quality working environment: The building's greatest significance must lay in its continued success in providing a suitable location for the study of Physics at Oxford.

3.5 Historical Significance

See Annexe 2.

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4 VULNERABILITIES

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4 VULNERABILITIES

4.1 The Ability of the Townsend Building to Fulfil its Current Function

The ability of the Townsend Building to continue to fulfil its rôle as a laboratory and teaching space is central to its continued significance. It is unfortunate that the dynamic requirements of scientific research have meant that throughout the 20th Century, when the heritage value of the building was not yet appreciated, much of the building was subdivided and altered; however, the areas that have retained their significance, notably the south and western external elevations and the main stairway, have done so because the building has remained in use, and has been maintained and cared for.

The current usage funds the upkeep and conservation of the heritage asset and ensures its continued existence and significance. The significant areas are not threatened, and its listed status ensures that any further alterations will operate within the constraints of an accepted understanding of the building's significance as a heritage asset.

4.1.1 Fire Safety

Fire safety has been improved substantially since the original building design, with the addition of the Simon Building to the east providing exits from every floor rather than egress being reliant on the ground floor exits, though internal subdivision has lengthened and complicated the escape routes.

The limit of accessible circulation routes, as well as the reliance on lifts located in the Simon Building, means that escape provision for disabled users is poor.

4.1.2 Security

The safety of the contents and users of the laboratory are central to its ability to fulfil its function as a working library and teaching space. The building houses highly valuable scientific equipment, which may be targeted by professional thieves, as well as computer equipment and user's personal belongings, which may be vulnerable to opportunists.

There is no public access to the building. Access is obtained via University swipe card at the main entrance or via a manned and swipe card/ bell-accessed reception at the Lindemann Building. "Tailgating" remains a weakness to such an approach, especially considering that the large numbers of undergraduates using the laboratory means that the building's legitimate users are not all familiar with one another. Once within the building, specific sensitive areas are accessed via swipe card (which must be appropriately registered), though many areas remain unlocked and easily accessible. The large size of the department and the cellular nature of the layout mean that once inside an intruder could likely operate undetected for some time.

4.1.3 Access

Disabled access to the building is hampered by its original design. Despite improvements it remains below the standard that should be expected of the building, and that will ensure it continued use, relevance, and significance into the future. The main entrance to the Townsend building is relatively narrow and requires the use of steps to access the work spaces. Disabled users must enter through the adjacent Simon or Lindemann buildings, and are reliant upon the lifts in the Simon Building in order to reach the upper floors. Circulation is severely curtailed for disabled users, for instance in the Institute for Experimental Photonics a spiral staircase provides multi-level access within the facility, but in order to change levels disabled users are required to leave the facility travel into the Simon Building, use the lift there, and then return to the Townsend Building and re-enter the facility (**Figure 6**).

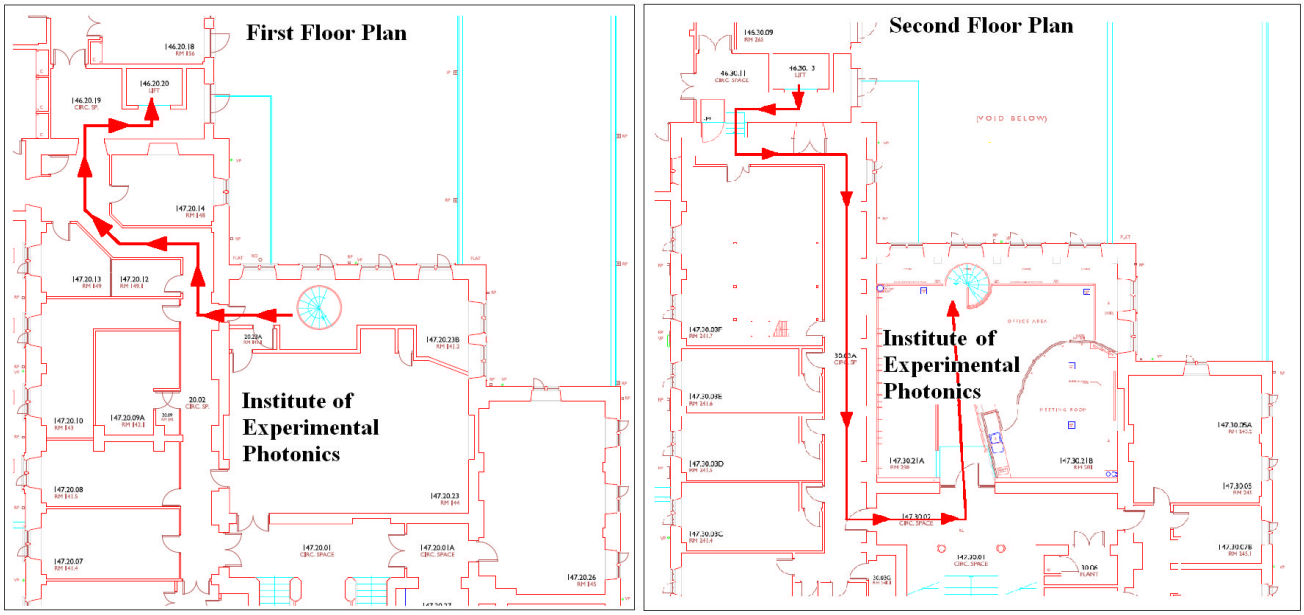

Figure 6. Disabled access between First and Second Floor of Institute of Experiemental Photonics. Note a spiral staircase directly connects the spaces, removing the same journey for users with full mobility

In order to meet acceptable current standards of accessibility all building users should be able to enter the building at the same points, and should be able to proceed through the building without disadvantage.

4.1.4 Circulation

The circulation routes in the original building design were simple, with the majority of the large rooms accessed directly from the central corridor on each floor, and movement between floors being via the main staircase; however, subsequent extensive subdivision has resulted in unclear circulation routes. The layout is relatively clear from plans, with the large original rooms acting as 'cells' accessed from the main corridor and then circulated internally (see **Figure 4**); however, this is largely illegible

on the ground, and movement within the building is confusing for any but familiar users.

The original Research Rooms 1 and 2 (spaces 147.10.21A, 21, 22, 23, 24, 24A, 24B, and 24C) in the southern wing of the ground floor are currently being returned to their original floor plan of two large spaces with a connecting door. This will certainly improve the legibility of circulation in this space, allowing direct access from the main circulation corridor.[12]

4.2 Exterior Elevations and Setting

The western elevation of the Townsend Building is its most significant architectural feature:

'*The building is in the English Renaissance style with well-detailed bright red-orange brickwork and ashlar stonework including the whole of the ground floor of the main façade. That, set back off Parks Road, is of three storeys with projecting wings either side of a five-bay centre. The central three bays of this comprise an ashlar centrepiece with attached columns and a pediment, with coats of arms of the University of Oxford and the Drapers' Company and heavy carved garlands below and around the second-floor windows. The wings, like the side bays of the central range with brick first and second floors over a stone ground floor, have slightly projecting ashlar central bays with four-light windows to either floor, those on the second with applied columns supporting pediments with carved laurel wreaths. To the left of the entrance, on the left-hand wing, a stone plaque with bronze oval inset records the Drapers' Company endowment of the building. The slate roof, hipped over the side wings, is pierced by very small dormer windows…With the adoption of the William and Mary to Queen Anne style for the Townsend Building in 1908 Jackson was moving with the times, and created a building whose façade in contrasting very red brick and ashlar is heavily detailed and deliberately decorative.*'[13]

The 10 regularly-spaced louvres on the southern, western, and northern elevations are also an important part of the original design, and break up the otherwise monotonous roof design.

The western elevation is the aspect of the building appreciated by the greatest number of people and which contributes most to the character of the setting. The elevation has aged well and is in excellent condition, but it is the most exposed face of the building and is open to weathering, erosion, and potential vandalism; damage which could detract from the significance of the heritage asset.

The landscape setting for the building is no longer as originally intended, as a grand, free-standing structure in parkland. For instance even the relatively unaltered southern elevation has lost much of its monumental aspect as it is overlooked by subsequent

[12] Planning application: *Application* 10/00648/*LBC*: *Listed Building Consent. Installation of high level fume extract to roof. Works to create clean room laboratory, replacement of services, new air handling unit, suspended ceiling and resin floor. Minor alterations to layout, installation of external condenser units and pipework, enlargement. Secondary glazing.*

[13] Listed Building Description (**Appendix 1**).

development, and has lost the 12-foot gap between itself and the surrounding road (now Sherrington Road). On the western elevation the stretch of the tarmac and parking up to the building itself detracts from the grandeur of the space and robs the main entrance of some of its impact. This should be remedied in the future with the reintroduction of a controlled monumental approach to the main elevation. The prominence of the main entrance has also been affected by the adoption of the Lindemann Building's entrance as the primary entry-point, which has the knock-on effect of making the internal main hall a peripheral space inconsistent with its quality.

4.3 Interior Layout, Fixtures, and Fittings

As noted above (**Section 2.2**) the interior layout has changed greatly since the original design due to the dynamic requirements of scientific research. Changes to the layout will affect the integrity of the original design, but as the building is now protected by its listed status future subdivisions will necessarily be designed to be reversible without damaging the original fabric.

The development of the interior of the building is poorly recorded but it seems probable that, away from the main staircase (**Section 4.3.1**), few of the original fixtures and fittings are extant. The folding doors between Research Room 1 and Research Room 2 in the original plan (rooms 147.10.21 and 23) are not original but have been identified as having some heritage value and have been conserved during recent alterations in this area. There is also some fine joinery elsewhere, notably doors and door cases off the main stairway, and consideration should be given to their cleaning.

As the Townsend Building is now a Grade II listed building, any future interior alterations, or repairs made using non-original materials, will require listed building consent.

4.3.1 The Entrance Hall and Main Staircase

The entrance hall and the main staircase are the most significant internal spaces of the Townsend Building. They are the grandest spaces of the building, and contain the greatest proportion of original material. They feature prominently in the building's listed building description (**Appendix 1**):

'*The central doorway leads into a hallway with stone detailing in a mixture of neo-Classical (arched openings) and late mediaeval (carved panels) styles. From this a double-height, stone double staircase rises to the full height of the building through two storeys. The staircase is well-detailed through its full height with stone arches over its turns, decorative iron and stone screens to the side, and stone columns at its second-floor head supporting the ceiling with central octagonal dome. Some of the joinery, notably grand door cases in the C17 style, is also of high quality*.'

The door cases are particularly fine, though consideration should be given to their cleaning and maintenance, as with the terrazzo floor finish throughout this area. The metalwork on the screens of the stairs (**Chapter 2 Cover)** is completed to a very high standard, adding significantly to the drama of the space.

As the interior features are in regular use and are in parts of less permanent construction than the external structure of the building, they are more vulnerable to vandalism, accidents, and general wear and tear. Some of these issues should be mitigated assuming adequate security is in place, but ultimately these significant elements will have limited lifespans. Their lives can be lengthened as much as possible through regular, adequate monitoring and maintenance.

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5

CONSERVATION POLICY

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5 CONSERVATION POLICY

Having established the significance of the Townsend Building as a heritage asset, and having identified ways in which the significance of the Townsend Building is vulnerable to harm, it is necessary to recommend policies to reduce the probability of such harm occurring, and thereby conserve the significance of the site. In essence, these policies set parameters for managing the fabric of the site and its setting.

The Conservation Plan is intended as an active tool for the regular maintenance and long-term management of the Townsend Building. It needs to be reviewed regularly, and revised as appropriate to take account of additional knowledge and changing priorities. Through a process of regular review it should continue to act as a useful resource.

5.1 The Townsend Building's current use, as a laboratory and teaching space, is vital to its continued significance. Permit, in line with NPPF paragraphs 131, 132, 133, and 134, alterations intended to facilitate its continued use in this way

The significance of the Townsend Building as a laboratory and teaching space means that its current rôle represents an important aspect of its overall significance. Limited alterations will inevitably be required to allow it to retain this significance in line with modern standards and requirements. If alteration is required in the future it should be permitted with the following provisos:

- Any alterations must be sympathetic to the Townsend Building's significance as a heritage asset and, in line with NPPF paragraph 134, any proposals that involve 'less than substantial harm to the significance' should deliver 'substantial public benefits.' In line with NPPF paragraph 132, any proposals that involve 'substantial harm or loss' should be 'exceptional.'

- Any changes should: '…preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset' (NPPF paragraph 137).

5.1.1 Note that the Townsend Building is a Grade II listed building and ensure that appropriate consents are obtained for any alteration works to the interior or exterior of the building

The nature of the building's use will inevitably necessitate further changes in the future, and due to the listed status of the building even minor routine repairs may need consent. Caution should be applied in order to ensure that any statuary duties are fulfilled. In cases of doubt **Estates Services should be contacted in the first instance**, and if necessary they will refer queries on to Oxford City Council.

5.1.2 Ensure proper consultation in advance of any work to the building with the Local Authority Conservation Officer (through Estates Services) and any other interested parties

It is important to guarantee that the best advice is obtained at an early stage of any proposal to alter any part of the building in order to ensure that the significance of the building is respected.

5.1.3 Refer to this Conservation Guide when considering repairs or alterations in any space

The Conservation Plan gives an overview of which aspects of the building are significant or vulnerable. Where original or significant material is extant, repairs should be carried out using the same materials and techniques and should not affect the significance of the asset without providing substantial public benefits in line with NPPF paragraph 134.

5.2 In order to ensure that the Townsend Building can operate to modern standards, and that its significance can be maintained by making access as wide as possible, special concern should be applied to ensuring that disabled access is adequate

Ensuring that the heritage asset can be enjoyed as widely as possible will have a major positive impact on its significance. As noted in **Section 4.1.3**, disabled access is not currently up to acceptable standards. Access will remain a major concern in any plans developed for the site, and will always be viewed as part of an ongoing process.

5.3 Any redevelopment needs to respect the character of the surrounding area and the Townsend Building's setting adjacent to listed buildings (e.g. University Museum, Museum Lodge)

It has been established that the Townsend Building is significant to the character of Parks Road, The Science Area, and north Carfax Ward (**Section 3.1**), interacting well with both the older and newer buildings around it. Any future alteration should be sympathetic to this fact, and should not diminish its rôle there. The landscape setting of the building should be improved to reinforce the impact of the western elevation in line with its original design as a free-standing structure with a monumental approach in a parkland setting.

5.4 Conservation of specific features contributing to overall significance

The interior fixtures and fittings have been poorly recorded and for the most part it is unclear where original material is extant (see **Section 4.3**). An effort should be made to identify and conserve original architectural features, and keep these in use where possible in line with **Section 5.1**; however, it is accepted that all materials have a natural life span and some degree of change must be permitted to keep the building safe, useable, and generally fit for its primary purpose as a working laboratory and teaching space. Some materials, such as the stone handrails within the main stairway, will have a very long life expectancy if given minor maintenance; others such as wooden doors are impermanent and will need periodic replacement. Within the

framework of understanding and valuing what is present in the building a degree of ongoing change is inevitable.

5.4.1 The western and southern exterior elevations will remain substantially unchanged

As established above (**Section 3.1** and **Section 4.2**), the exterior elevations are integral to the significance of the Townsend Building. Any changes to these will significantly affect the character of the building. Allowing for necessary changes in line with **Section 5.1**, they will remain unchanged from the original design.

5.4.2 The entrance hall and main stairway will remain substantially unchanged with consideration given to the cleaning of the significant features

These are the areas of the building closest to their original state and layout, and are vital to the significance of the building as a heritage asset. Loss or alteration of these spaces would negatively affect the character of the heritage asset and they should be conserved as a good example of the original character of the interior. The elaborate doorcases and terrazzo floor finishes in particular should be cleaned and conserved in the near future.

5.5 In the vein of NPPF paragraph 110, efforts should be made to ensure that the Townsend Building's contribution to climate change is as minimal as is feasible for a building of its age, size, materials, and use. Any proposals for alterations should assess the feasibility of incorporating low and zero carbon technologies

Ensuring that the building is sustainable will be crucial to its long-term survival and significance. As stated in NPPF paragraph 110, development should seek to 'minimise pollution and other adverse effects on the local and natural environment.'

5.6 A disaster recovery plan will be prepared for the building and will be regularly reviewed to keep it up to date

This is an architecturally significant building with internal contents of particular value and academic significance. It is imperative for the safety of the building that a clear disaster recovery plan exists.

5.7 If during subsequent renovations or alterations any excavation work is carried out beneath the Townsend Building or surrounding area an archaeological assessment will be made of the potential for significant finds, and if appropriate an archaeologist will be given a watching brief as the excavation takes place

There is the potential for significant archaeological material across the site and should any excavation work be carried out an assessment of the archaeological potential should be made. This should include at least a desk assessment, but possibly geophysics and trial trenching. A watching brief will almost certainly be required for any such work.

5.8 A good practice of routine recording, investigation, and maintenance will be enacted and sustained. Such an approach will minimise the need for larger repairs or other interventions and will usually represent the most economical way of retaining an asset

5.8.1 Estates Services (or its agents) will ensure that a senior member of staff has responsibility for the administration and recording of a routine maintenance programme for the building

All buildings need to be routinely maintained if they are to stay in good condition. This requires a detailed maintenance programme and, critically, someone who is responsible for ensuring that the routine operations are carried out. A proper record of the repair and maintenance work in a maintenance log is a useful management tool. Such information will be recorded in the Estates Management software package *Planon*.

5.8.2 A detailed routine maintenance programme will be prepared for the building

Maintenance is best carried out as a series of planned operations. A well thought-out and properly-administered maintenance programme may appear to be time-consuming but will result in a better-functioning building with less need for emergency repairs.

5.8.3 The Conservation Plan will be circulated to all senior staff who work in the Townsend Building and to all other members of the University who have responsibility for the building or the collection

The value of the building needs to be appreciated by all the senior staff managing or working in the building. Only in this way will the heritage asset be properly treated, repaired, and maintained.

5.8.4 The Conservation Plan will be made available to Oxford City Council, English Heritage, and any other party with legitimate interest in the building

The Conservation Plan is intended to be a useful document to inform all parties with a legitimate interest in the building.

5.9 The Conservation Plan will be reviewed and updated from time to time as work is carried out on the building or as circumstances change. The recommendations should be reviewed at least at five-yearly intervals

Policy changes, building alterations, or other changes of circumstance, will affect the conservation duties and requirements of the building. The policy recommendations in the Conservation Plan will inform the future of the building and should be a useful tool for people carrying out maintenance work or where more significant alterations are being considered. The recommendations need to be kept up to date if they are to remain relevant.

6

BIBLIOGRAPHY

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6 BIBLIOGRAPHY

6.1 Government Reports and Guidance

- The Department for Communities and Local Government, *National Planning Policy Framework* (March, 2012).

- *Town and Country Planning Act* 1990.

- *Planning (Listed Buildings and Conservations Areas) Act* 1990.

6.2 Planning Applications and Supporting Documents

- *Application* 10/00648/*LBC*: *Listed Building Consent. Installation of high level fume extract to roof. Works to create clean room laboratory, replacement of services, new air handling unit, suspended ceiling and resin floor. Minor alterations to layout, installation of external condenser units and pipework, enlargement. Secondary glazing.*

6.3 Books and Articles

- Fox, R., Gooday, G., and Simcock, T., 'Physics in Oxford: Problems and Perspectives' in Fox, R., and Gooday, G., (eds.), *Physics in Oxford*, 1839-1939: *Laboratories, learning, and college life* (Oxford, 2005).

- Hinchcliffe, T., *North Oxford* (London, 1992).

- Howell, P., 'Oxford Architecture, 1800-1914' in Brock, M.G., and Curthoys, M.C., (eds.), *The History of the University of Oxford,* Vol. VII (Oxford, 2000).

- Howell, P., 'Architecture and Townscape since 1800' in Whiting, R.C., (ed.), *Oxford: Studies in the History of a university town* (Manchester, 1993) 53-84.

- Jackson, T.G., *Recollections* (Jackson, B.H., ed.; Oxford, 1950; and Jackson, N., ed.; London, 2003).

- Lankester, J., *Sir Thomas Graham Jackson, Bart., R.A.,* 1835-1924: *An Exhibition of his Oxford Buildings, Examination Schools, Oxford,* 1983 (Oxford, 1983).

- Lelong, B., 'Translating Ion Physics from Cambridge to Oxford: John Townsend and the Electrical Laboratory, 1900-24' in Fox, R., and Gooday, G., (eds.) *Physics in Oxford*, 1839-1939: *Laboratories, learning, and college life* (Oxford, 2005).

- O'Dwyer, F., *The Architecture of Deane and Woodward* (Cork, 1997).

- Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974).

- Tyack, G., *Oxford: An Architectural Guide* (Oxford, 1998).
- Ward, H., *History of the Athenaeum*, 1824-1925 (London, 1926).
- Whyte, W., *Oxford Jackson: Architecture, education, status, and style,* 1835-1924 (Oxford, 2006).

6.4 Other Documents

- Courtesy of Oxford University Archives:
  - Historic correspondences relating to the Electrical Laboratory, 1908-48: OUA reference UC/FF/77/1-2.
  - Sir Thomas Graham Jackson's original drawings and plans: OUA reference ET/2/1/3/1-7.

6.5 Websites

- Encyclopaedia Britannica Academic Edition 2010: http://www.britannica.com/EBchecked/topic/601090/Sir-John-Sealy-Edward-Townsend, accessed 08.10.2010.
- English Heritage, Listed Buildings Online: http://lbonline.english-heritage.org.uk/BuildingDetailsForm.aspx?id=502794&search=y, accessed on 12.10.2010.
- Oxford University Physics Department: http://www.physics.ox.ac.uk/history.asp?page=historybrief, accessed 12.10.2010.
- Research Assessment Exercise: http://www.rae.ac.uk/, accessed on 08.10.2010.
- Royal Society of Chemistry: http://www.rsc.org/Chemsoc/Activities/ChemicalLandmarks/UK/ClarendonLandmark.asp, accessed 12.10.2010.
- University Parks: http://www.parks.ox.ac.uk/introduction/, accessed 24.09.2010.

6.6 Image Credits

- Cover: Estates Services Photograph
- Chapter Covers:

- Chapter 3: Adapted from T.G. Jackson's original plans, courtesy of Oxford University Archives, photography by Dick Makin of Dick Makin Imaging.

- All other Chapter Covers: Estates Services Photographs.

- Figure 1: Adapted from Google Maps: http://maps.google.co.uk/maps?hl=en&tab=wl, accessed 12.10.2010.

- Figure 2: From *The Builder*, 8th May 1909, courtesy of Oxford University Archives.

- Figure 3: Estates Services photograph.

- Figure 4: Adapted from Oxford University CAD plan, courtesy of Warwick Clifton, Building Services Manager, Department of Physics.

- Figure 6: Adapted from Bang Maps: http://www.bing.com/maps/#JnE9LnNvdXRoK3BhcmtzK3JvYWQrb3hmb3JkJTdlc3N0LjAlN2VwZy4xJmJiPTU2LjQ3MDg0NTAzNjQ2MzYlN2U4Ljk0MTcyOTY2NTI1JTdlNDYuNDc4NTQ4NDIzNjc2OSU3ZS0xMS40OTI4NDA2NDcyNQ==, accessed 30.03.2011.

- Figure 6: Adapted from Oxford University CAD plan, courtesy of Warwick Clifton, Building Services Manager, Department of Physics.

- Appendix 4: Adapted by author from Oxford University CAD plan, courtesy of Warwick Clifton, Building Services Manager, Department of Physics.

- Appendix 5: Original plans courtesy of Oxford University Archives, photography by Dick Makin of Dick Makin Imaging.

- Annexe 2 Figure 1: From Wikipedia Commons: http://upload.wikimedia.org/wikipedia/commons/d/dd/Henry_Moseley.jpg and http://upload.wikimedia.org/wikipedia/commons/a/a8/John_Sealy_Townsend.jpg

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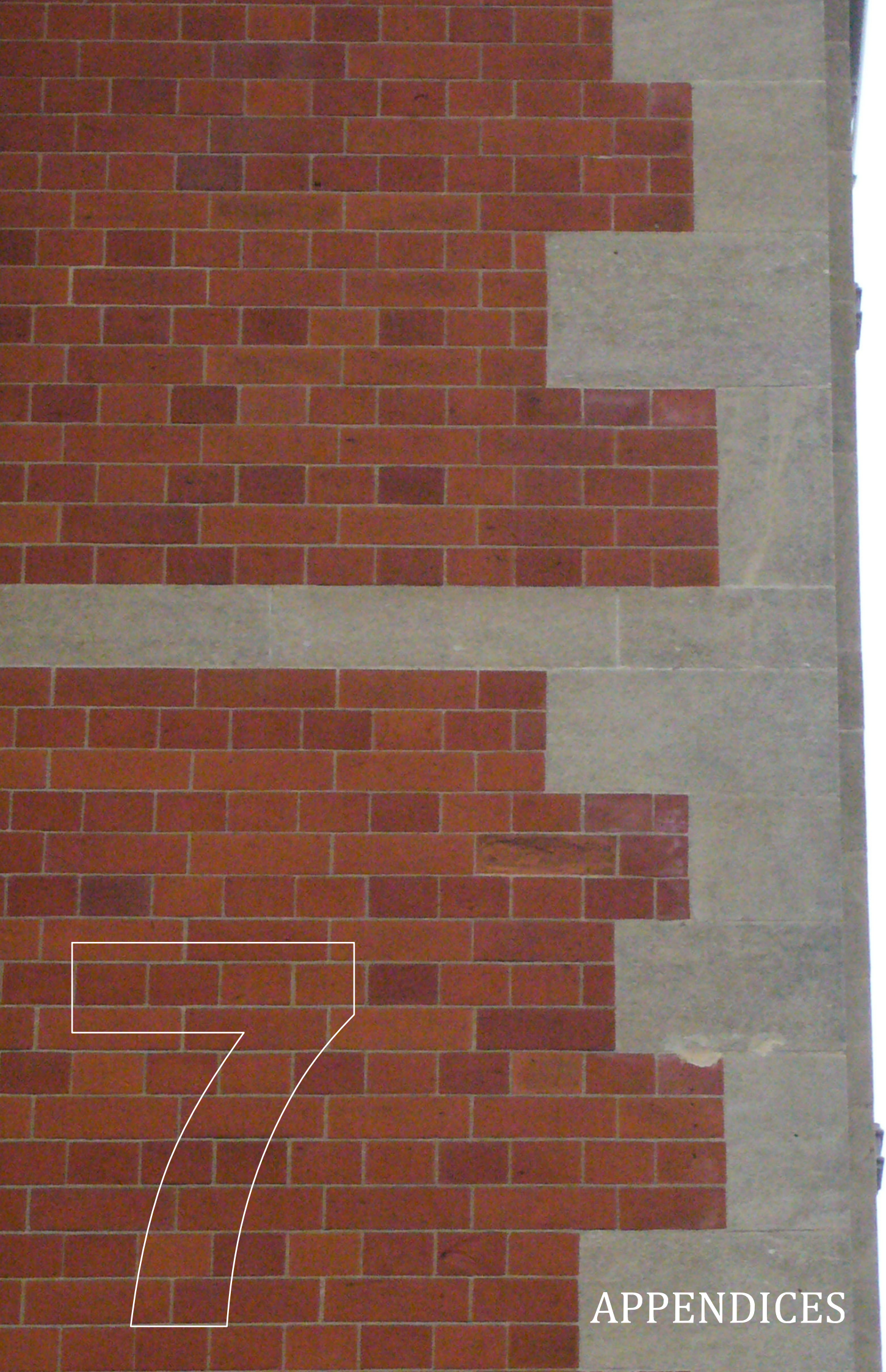

7

APPENDICES

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7 APPENDICES

Appendix 1

Listed Building Description

Building Details:	**Details:**
Building Name: THE TOWNSEND BUILDING	**LBS Number:** 502794
Parish: OXFORD	**Grade:** II
District: OXFORD	**Date Listed:** 31/10/2008
County: OXFORDSHIRE	**Date Delisted:**
Postcode:	**NGR:** SP5142607014

Listing Text:

612/0/10181 PARKS ROAD
31-OCT-08 The Townsend Building

II
University science building/laboratory of 1908-10 by T G Jackson.

MATERIALS: Red brick and stone with ashlar dressings and coursed rubble ground floor.

EXTERIOR: The building is in the English Renaissance style with well-detailed bright red-orange brickwork and ashlar stonework including the whole of the ground floor of the main façade. That, set back off Parks Road, is of three storeys with projecting wings either side of a five-bay centre. The central three bays of this comprise an ashlar centrepiece with attached columns and a pediment, with coats of arms of the University of Oxford and the Drapers' Company and heavy carved garlands below and around the second-floor windows. The wings, like the side bays of the central range with brick first and second floors over a stone ground floor, have slightly projecting ashlar central bays with four-light windows to either floor, those on the second with applied columns supporting pediments with carved laurel wreaths. To the left of the entrance, on the left-hand wing, a stone plaque with bronze oval inset records the Drapers' Company endowment of the building. The slate roof, hipped over the side wings, is pierced by very small dormer windows.

The Townsend Building was originally free-standing. It received an extension to the rear (east) in the 1960s (Simon Building), and is now abutted to the north by the Sir Martin Wood lecture theatre of 2000 which itself abuts the 1948 Clarendon Laboratory (not listed). This later extension is not of special interest.

INTERIOR: The central doorway leads into a hallway with stone detailing in a mixture of neo-Classical (arched openings) and late medieval (carved panels) styles. From this a double-height, stone double staircase rises the full height of the building through two storeys. The staircase is well-detailed through its full height with stone arches over its turns, decorative iron and stone screens to the side, and stone columns at its second-floor head supporting the ceiling with central octagonal dome. Some of the joinery, notably grand door cases in the C17 style, is also of high quality. A lecture theatre off the centre of the staircase which occupied the first and second floors has had a floor inserted across it and been subdivided into a laboratory and workrooms. At second floor is a doorcase into a room that has been infilled, but that has bases of riveted steel trusses still visible.

HISTORY: The Science Area, on the north-east fringe of Oxford, began to develop in the 1860s after the conservative university finally decided to institute an Honour School in Natural Science in 1850. At first buildings were annexes of the University Museum on Parks Road, but later gained independence.

The Townsend Building (or the Second Electrical Laboratory) stands towards the north edge of the Science Area, south of the Clarendon Laboratory. Built between 1908 and 1910 and funded by the Drapers' Company, it was designed by T G Jackson (1835-1924; created baronet 1913) who had made the Jacobean/English Renaissance style fashionable in Oxford in the 1870s to the extent that it was nicknamed 'Jacksonbethan' and 'Anglo-Jackson'. The building was completed in the year that he won the RIBA Gold Medal. It was the first of the detached buildings to break out of the Museum boundary and into the park beyond.

It was in this building that the experimental physicist H G J Moseley carried out experiments which established the ordering of the elements in terms of their atomic numbers which, it is thought, would have almost certainly have gained him a Nobel Prize, had he not been killed in 1915 at Gallipoli.

SOURCES: J Sherwood and N Pevsner, Oxfordshire (1974), p.278; Oxford Dictionary of National Biography, s.v. Moseley, H.G.J.

SUMMARY OF IMPORTANCE: The Townsend Building (or the Second Electrical Laboratory) stands towards the north edge of the Science Area. Of 1908-10, it was designed by T G Jackson, who pioneered the study and revival of English Renaissance architecture and who had made the Jacobean/English Renaissance style fashionable in Oxford in the 1870s. With the adoption of the William and Mary to Queen Anne style for the Townsend Building in 1908 Jackson was moving with the times, and created a building whose façade in contrasting very red brick and ashlar is heavily detailed and deliberately decorative. It was here that the experimental physicist H G J Moseley carried out experiments which established the ordering of the elements in terms of their atomic numbers, which, it is thought, would have almost certainly have gained him a Nobel Prize, had he not been killed in 1915 at Gallipoli.

Appendix 2

Chronology of the Townsend Building

1908-1910	Construction of Electrical Laboratory
8th July 1908	J. Augustus Soutter requests permission to submit a design for the Electrical Laboratory, but is denied
17th December 1908	Jackson completes his plans for the Electrical Laboratory
26th October-4th November 1908	Jackson's plans are received by the University. They require the clearance of trees and shrubbery for the construction of new roads
20th November 1908	It is decided to shift the railings between the Park and Museum Precincts in order to facilitate the placement of the new laboratory
1908	The drain from the Biology Building is shifted to follow the route of the new road
30th January 1909	New College agrees to meet the full annual cost of £700 for the Wykeham Professorship of Physics
21st June 1910	Electrical Laboratory opened by Lord Curzon of Kedleston
18th July 1910	Townsend complains the workmen are building the new road too close to the Electrical Laboratory
27th July 1910	A letter from Sun Insurance notes that the building is now occupied
31st August 1910	Letter from Norwich Union notes that the building 'now or will shortly be completed by the Builders.'
10th November 1910	Apparatus within the building insured for £3000
17th November 1910	Thomas Graham Jackson confirms the total construction costs as £17, 391.
1910	Thomas Graham Jackson awarded the RIBA Gold Medal
1913-1914	Moseley works in the Electrical Laboratory and establishes the ordering of the elements in terms of their atomic numbers
1914	Townsend awarded the Royal Society's Hughes Medal 'for his researches on electric induction in gases,' conducted in the Electrical Laboratory
Summer 1919	Boiler repaired
9th March 1920	Townsend complains that the boiler is leaking again
29th June 1920	Repainting of external wood and iron work is authorised at the cost of £100
1921	Boiler replaced
13th October 1921	Townsend complains that one of the ceiling beams has split and should receive attention
19th June 1922	Townsend complains of a leak in the NW corner of the roof of the Electrical Laboratory
7th November 1924	Thomas Graham Jackson dies
June 1932	Calorifier refurbished
1933	Partition wall erected in the dark room at the request of Townsend
1934	Emergency fire hoses installed

1935	Alternating Current introduced to 'some rooms of the building.'
1935	Walls washed, painted, and repaired of cracks
1937-38	Permission to construct an external shed for the charging of batteries granted, but despite various designs the necessary funds are never approved
1939	Opening of the second Clarendon Laboratory directly to the north
15th November 1943	A request to install fluorescent tube lighting in the lecture theatre of the Electrical Laboratory is denied
1946	Doorway constructed within the Electrical Laboratory opposite the entrance to the Workshop of the Physics Building (Lindemann Building)
4th May 1948	The Curators of the University Chest release £2,131.2.3 for the rewiring of the electrical installation and the conversion throughout the building from Direct Current to Alternating Current
1960's	Simon Building constructed as an extension to the Electrical Laboratory to the east
2000	Sir Martin Wood Lecture Theatre constructed connecting the Townsend and the Lindemann Buildings of the Clarendon Laboratory
2002	Institute of Experimental Photonics constructed on first and second floors

Appendix 3

CHECKLIST OF SIGNIFICANT FEATURES

This checklist is intended for the use of those working or planning work on the building. It highlights features of architectural significance within the Townsend Building of the Clarendon Laboratory; these may be original features or new additions that nevertheless contribute positively to the character of the building. As this is a Grade II listed building any repair or alteration work to factors that contribute to the significance of the building will require listed building consent in order to avoid prosecution under the Planning (Listed Building and Conservation Areas) Act, 1990. **If planned work will likely affect any of the aspects featured in the list below advice should immediately be sought from the Building Conservation Team at Estates Services.**

The checklist lists both general significant features that affect the building as a whole and which should be held in mind if working in any space, and specific features of particular significance that should receive special regard if working in these particular spaces. The Further Information column refers to the relevant page reference in the Conservation Plan proper.

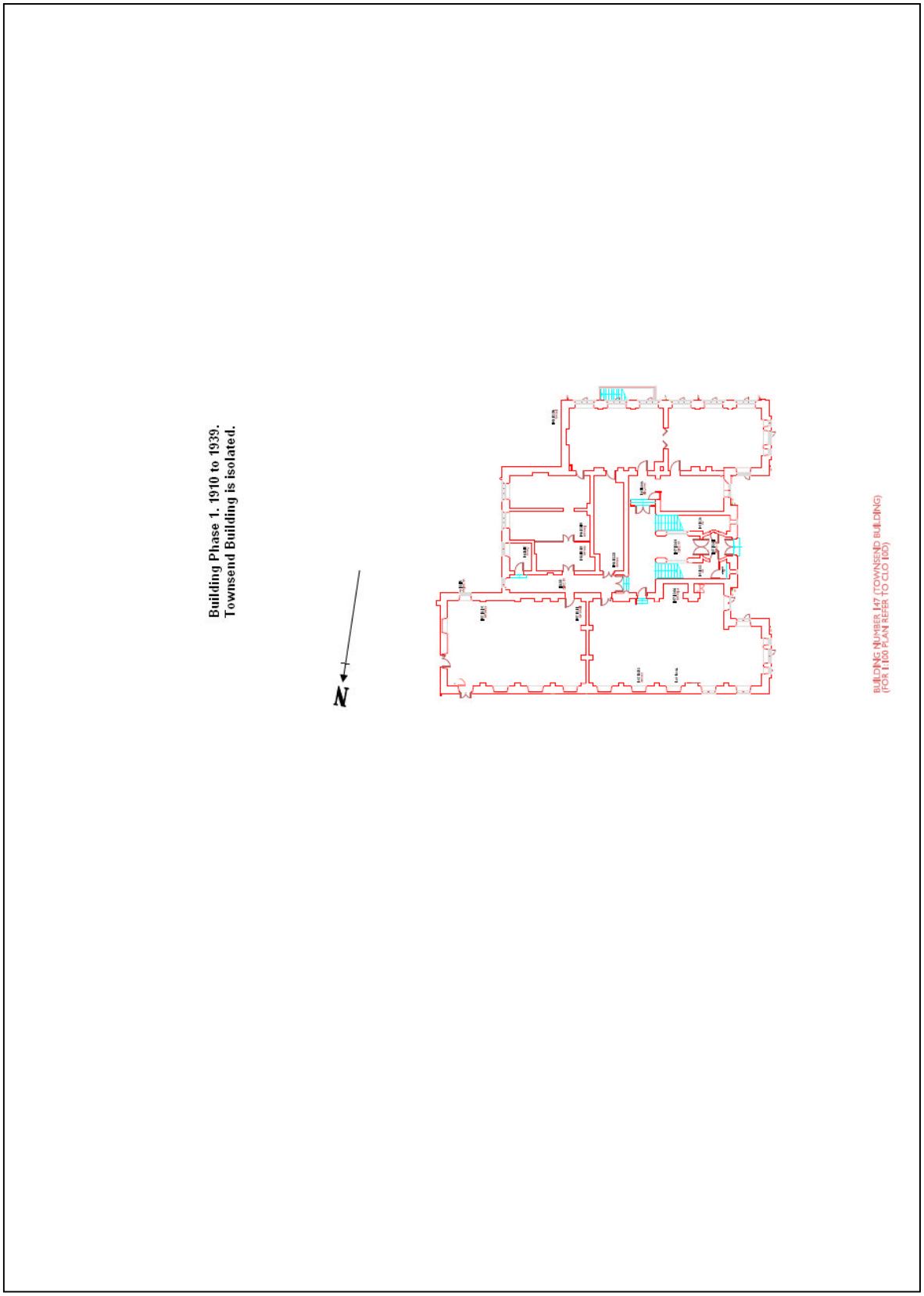
Townsend Building of the Clarendon Laboratory, Building No. 147		
SIGNIFICANT FEATURE	✓	Further Information
General:		
External Elevations		p. 15-17, 21-24, 31, 39
External and internal original brickwork		p. 15-17, 21-24, 31-32, 39
External and internal stonework		p. 15-17, 21-24, 31-32, 39
Visible slopes of roof		p. 31
Any original fixtures or fittings		p. 21-24, 31-32
Doors (if thought to be original or provenance is unclear) and door cases throughout		p. 32, 38
Windows throughout		p. 17, 21
Any carved details		p. 31-32
Specific Features:		
External Elevations:		
-Ashlar pilasters and Doric capitals on centrepiece		p. 15-17, 21-24, 31-32, 39
-Ashlar entablature and pediment on centrepiece		p. 15-17, 21-24, 31-32, 39
-Carved ashlar coats of arms and garlands on centrepiece		p. 15-17, 21-24, 31-32, 39
-Ashlar pilasters and Ionic capitals on projecting wings		p. 15-17, 21-24, 31-32, 39

-Ashlar entablature, pediment, and ball finial on projecting wings		p. 15-17, 21-24, 31-32, 39
-Carved ashlar garlands on projecting wings		p. 15-17, 21-24, 31-32, 39
-Circular louvres and ashlar bays on projecting wings		p. 15-17, 21-24, 31-32, 39
-Ashlar window bays and windows throughout		p. 17, 21
-Ashlar and coursed rubble facing on ground floor		p. 15-17, 21-24, 31-32, 39
-Ashlar quoins, banding, dentils, and corbels		p. 15-17, 21-24, 31-32, 39
-Brickwork throughout		p. 15-17, 21-24, 31-32, 39
-Roof and white, projecting louvres		p. 31
-Red-brick chimneys with ashlar banding		p. 15-17, 21-24, 31-32, 39
-Shallow, elliptical recesses on northern elevation		p. 21-24, 31-32, 38-39
-Ashlar entablature, pediment, and ball finials on central window of northern elevation		p. 21-24, 31-32, 38-39
-Carved garlands around central window of northern elevation		p. 21-24, 31-32, 38-39
Entrance Hall and Stairway:		
-Stone carving and detailing		p. 21-24, 31-32, 38-39
-Carved stone panels		p. 21-24, 31-32, 38-39
-Stone arches in hall		p. 21-24, 31-32, 38-39
-Stone stairs		p. 21-24, 31-32, 38-39
-Stone handrail		p. 21-24, 31-32, 38-39
-Iron and stone screens on staircase		p. 21-24, 31-32, 38-39
-Stone arches over staircase		p. 21-24, 31-32, 38-39
-Stone columns on second floor		p. 21-24, 31-32, 38-39
-Central octagonal dome over second floor		p. 21-24, 31-32, 38-39
-Window settings		p. 21-24, 31-32, 38-39

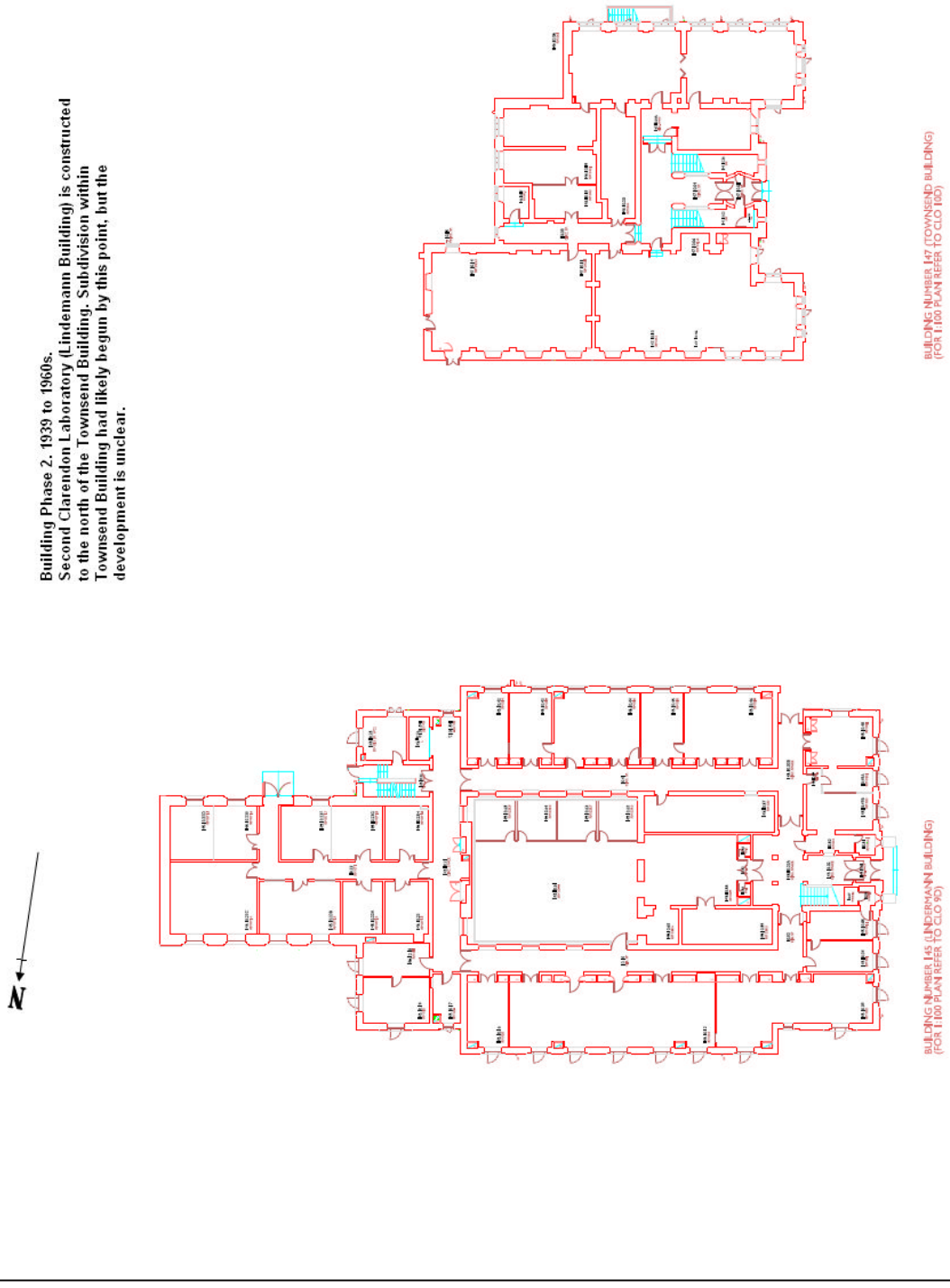
PRIOR TO UNDERTAKING <u>ANY</u> REPAIRS OR ALTERATIONS ON THE ABOVE-LISTED ARCHITECTURAL FEATURES, CONTACT THE CONSERVATION TEAM AT ESTATES SERVICES ON (01865) (2)78750

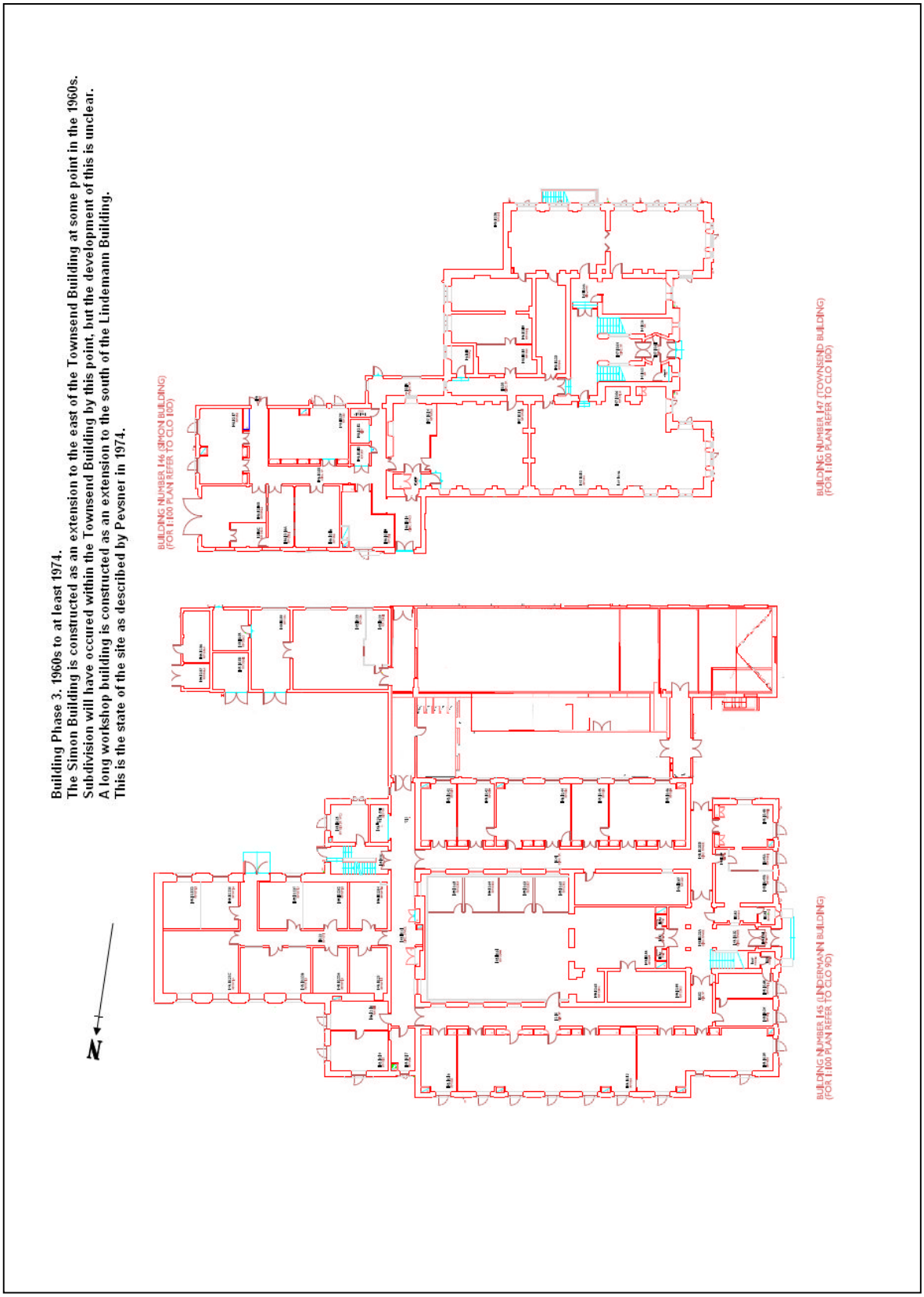
Appendix 4

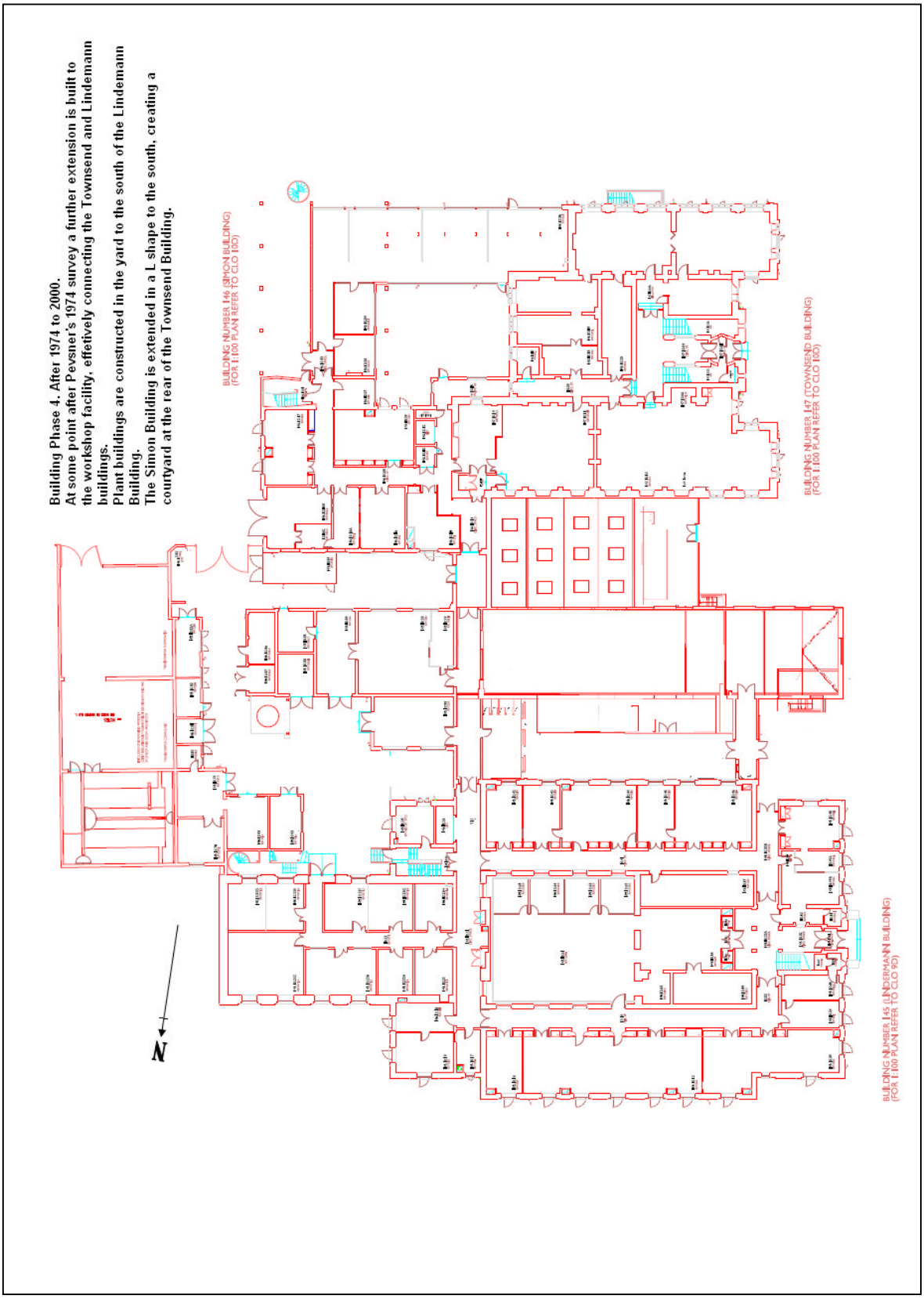
Phased Development Plans

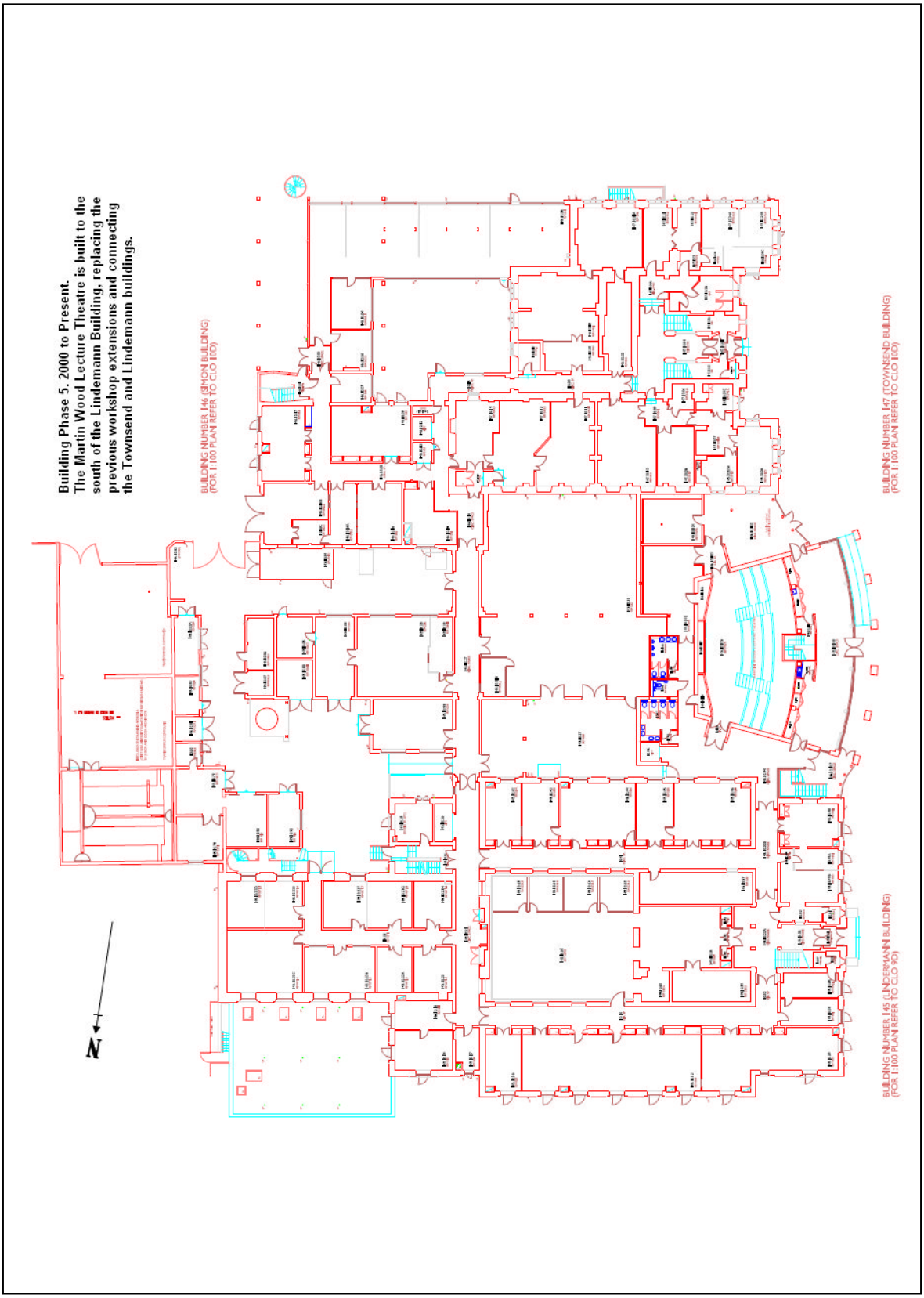


Building Phase 2. 1939 to 1960s.
Second Clarendon Laboratory (Lindemann Building) is constructed to the north of the Townsend Building. Subdivision within Townsend Building had likely begun by this point, but the development is unclear.




Building Phase 3. 1960s to at least 1974.
The Simon Building is constructed as an extension to the east of the Townsend Building at some point in the 1960s.
Subdivision will have occured within the Townsend Building by this point, but the development of this is unclear.
A long workshop building is constructed as an extension to the south of the Lindemann Building.
This is the state of the site as described by Pevsner in 1974.
BUILDING NUMBER 146 (SIMON BUILDING)
(FOR 1:100 PLAN REFER TO CLO 100)
BUILDING NUMBER 147 (TOWNSEND BUILDING)
(FOR 1:100 PLAN REFER TO CLO 100)
BUILDING NUMBER 145 (LINDEMANN BUILDING)
(FOR 1:100 PLAN REFER TO CLO 95)
N


Building Phase 4. After 1974 to 2000.
At some point after Pevsner's 1974 survey a further extension is built to the workshop facility, effetively connecting the Townsend and Lindemann buildings.
Plant buildings are constructed in the yard to the south of the Lindemann Building.
The Simon Building is extended in a L shape to the south, creating a courtyard at the rear of the Townsend Building.
BUILDING NUMBER 146 (SIMON BUILDING) (FOR 1:100 PLAN REFER TO CLO 160)
BUILDING NUMBER 147 (TOWNSEND BUILDING) (FOR 1:100 PLAN REFER TO CLO 160)
BUILDING NUMBER 145 (LINDEMANN BUILDING) (FOR 1:100 PLAN REFER TO CLO 90)
N


Building Phase 5. 2000 to Present.
The Martin Wood Lecture Theatre is built to the south of the Lindemann Building, replacing the previous workshop extensions and connecting the Townsend and Lindemann buildings.
BUILDING NUMBER 146 (SIMON BUILDING) (FOR 1:100 PLAN REFER TO CLO 100)
BUILDING NUMBER 147 (TOWNSEND BUILDING) (FOR 1:100 PLAN REFER TO CLO 100)
BUILDING NUMBER 145 (LINDEMANN BUILDING) (FOR 1:100 PLAN REFER TO CLO 90)
N

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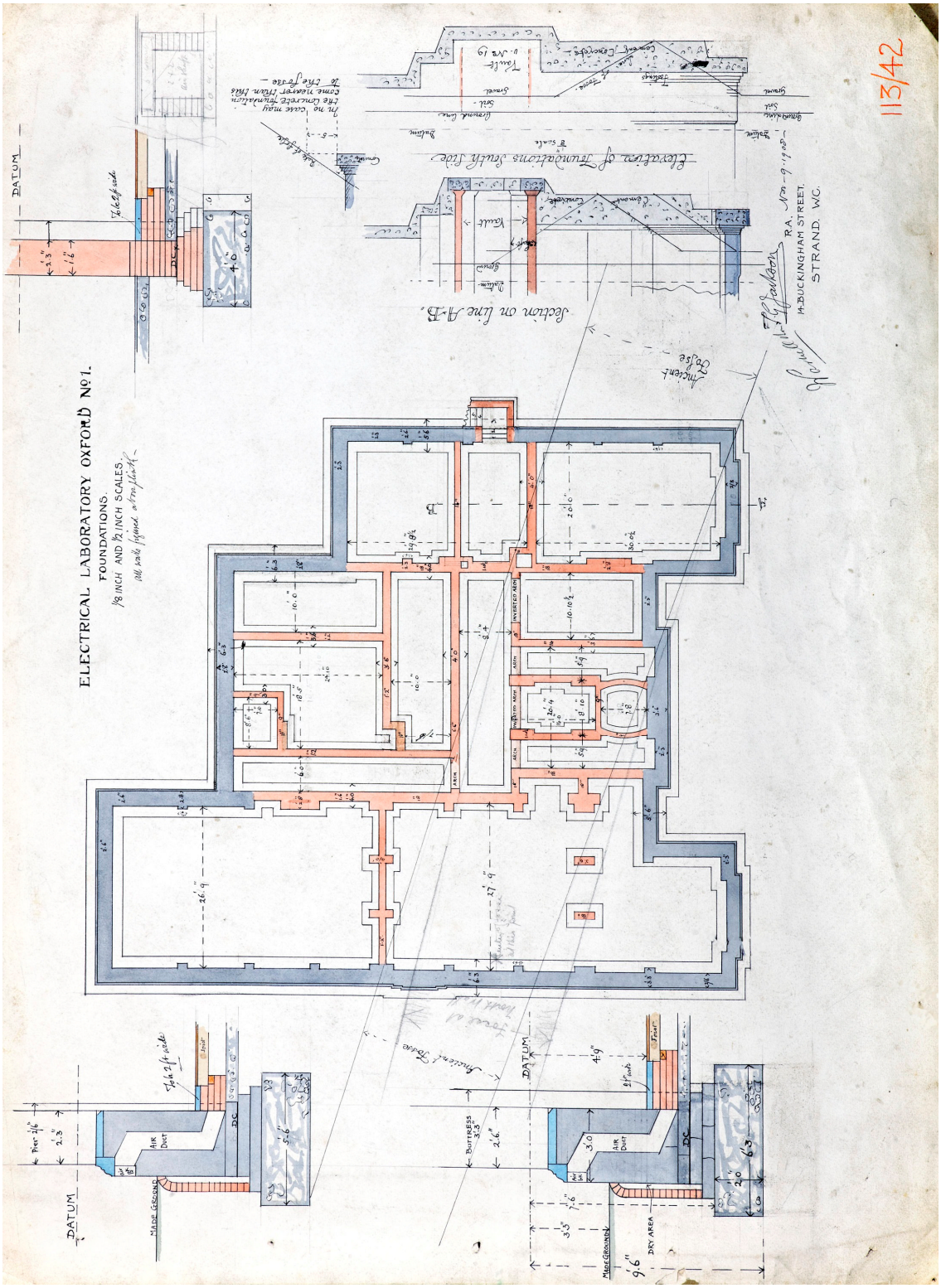
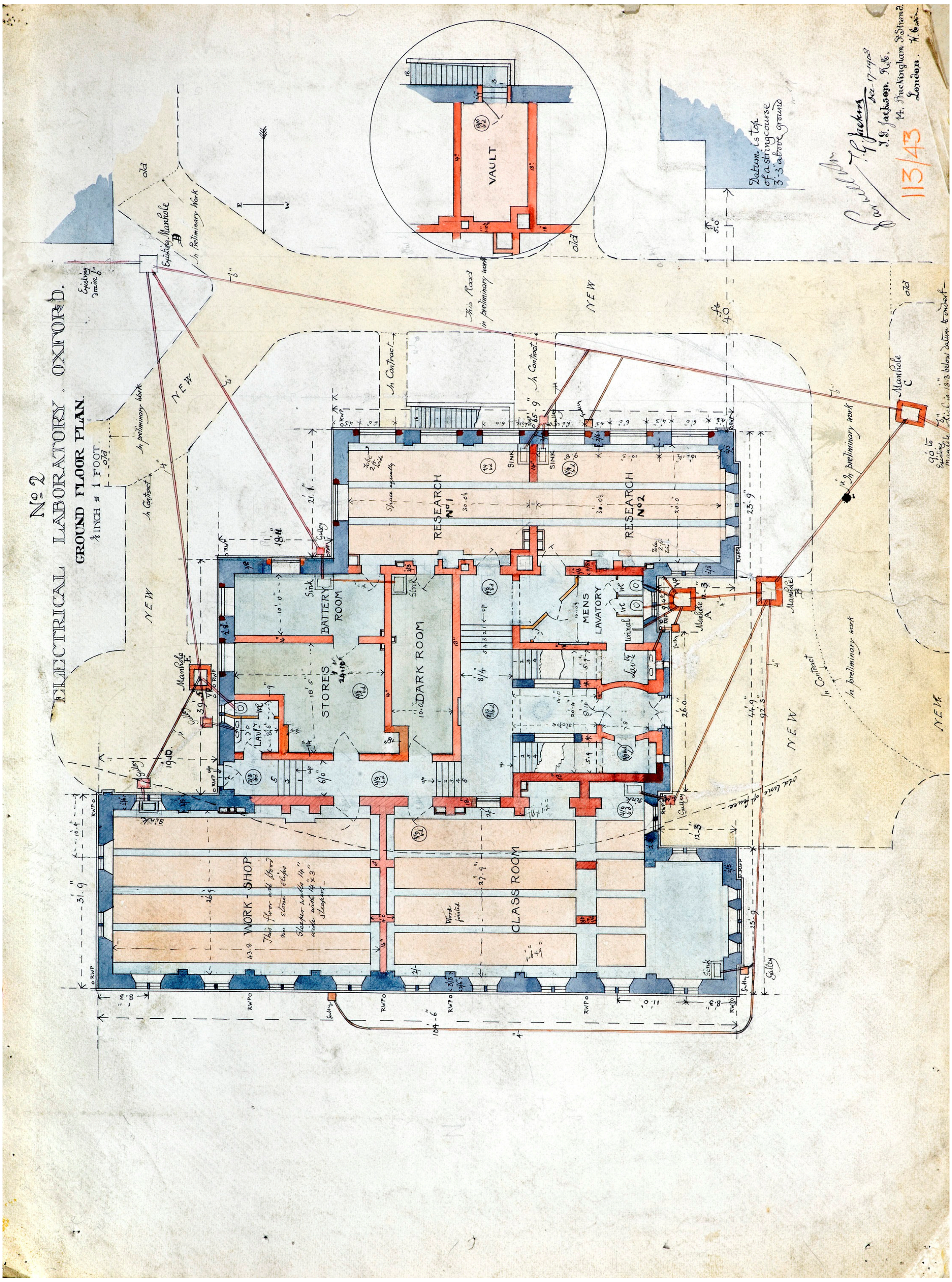
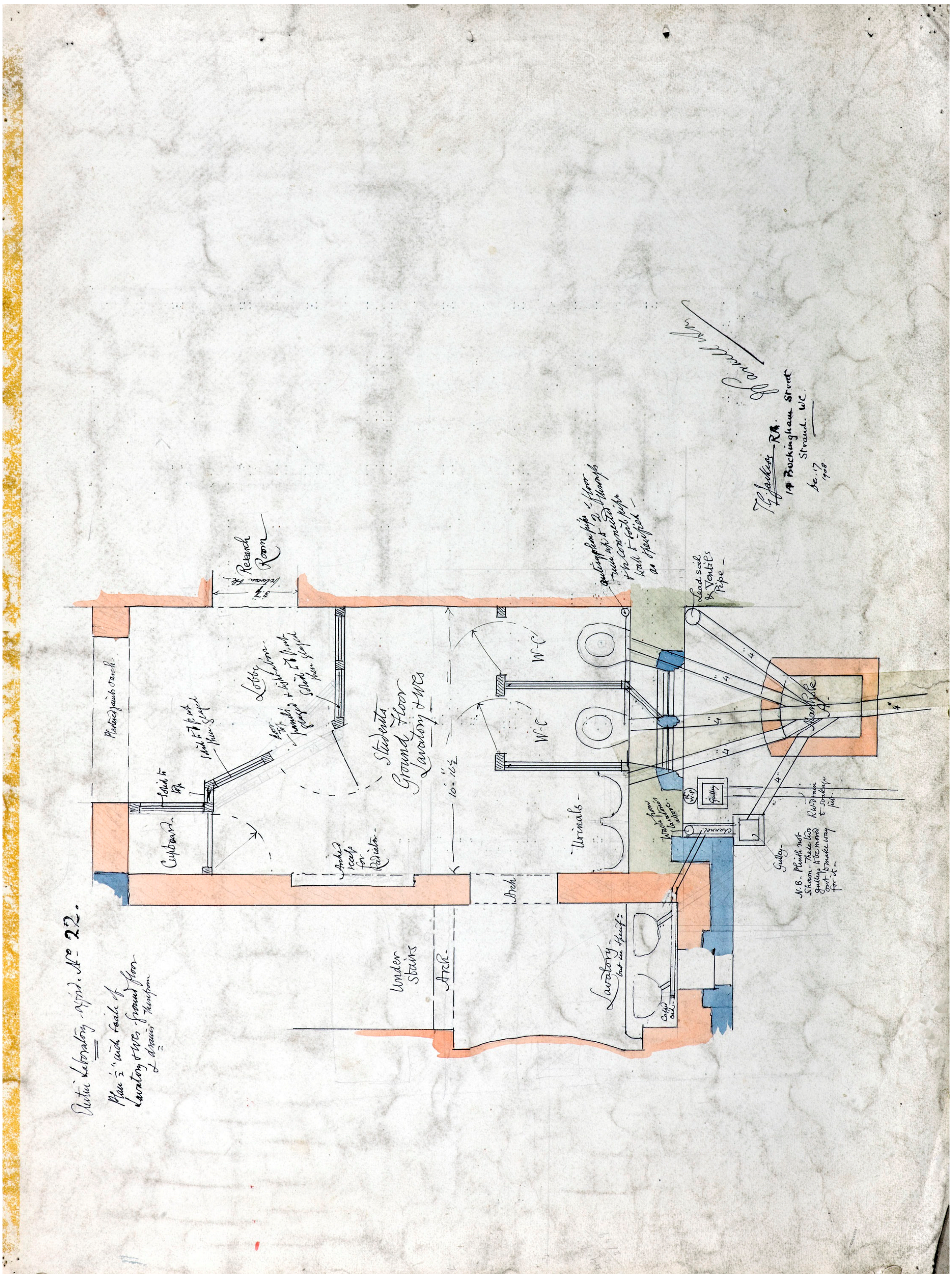
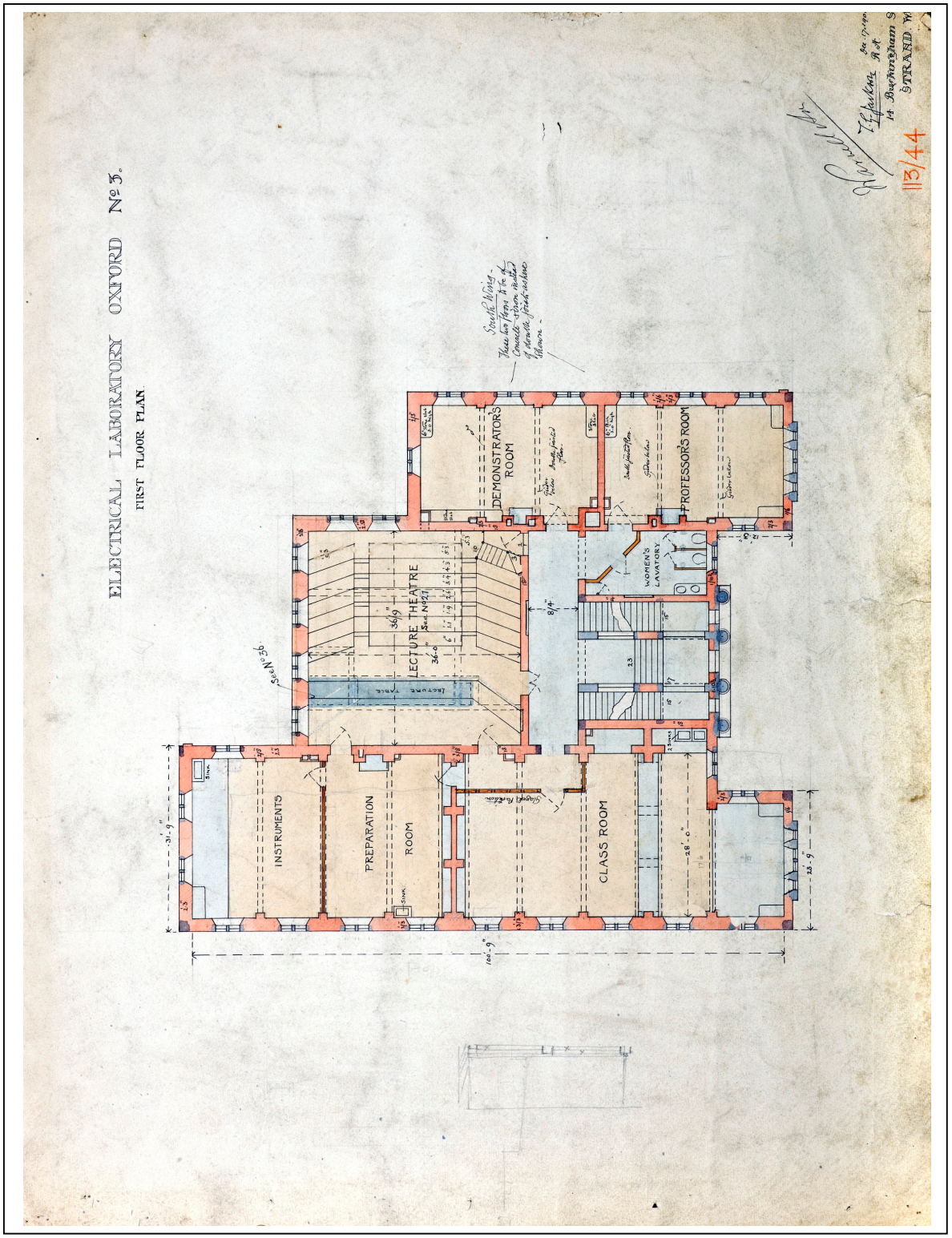
Appendix 5

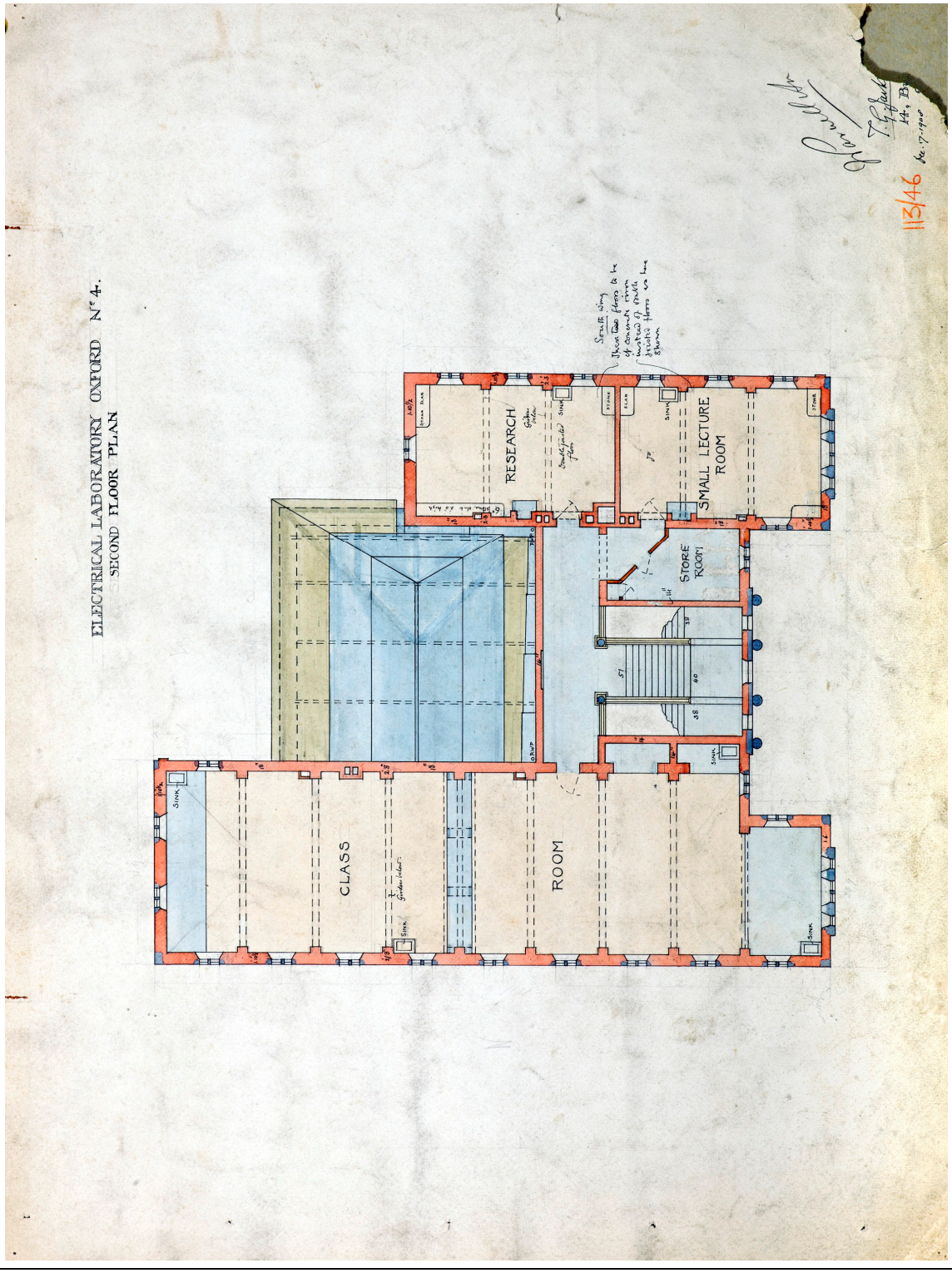
T.G. Jackson's Original Plans

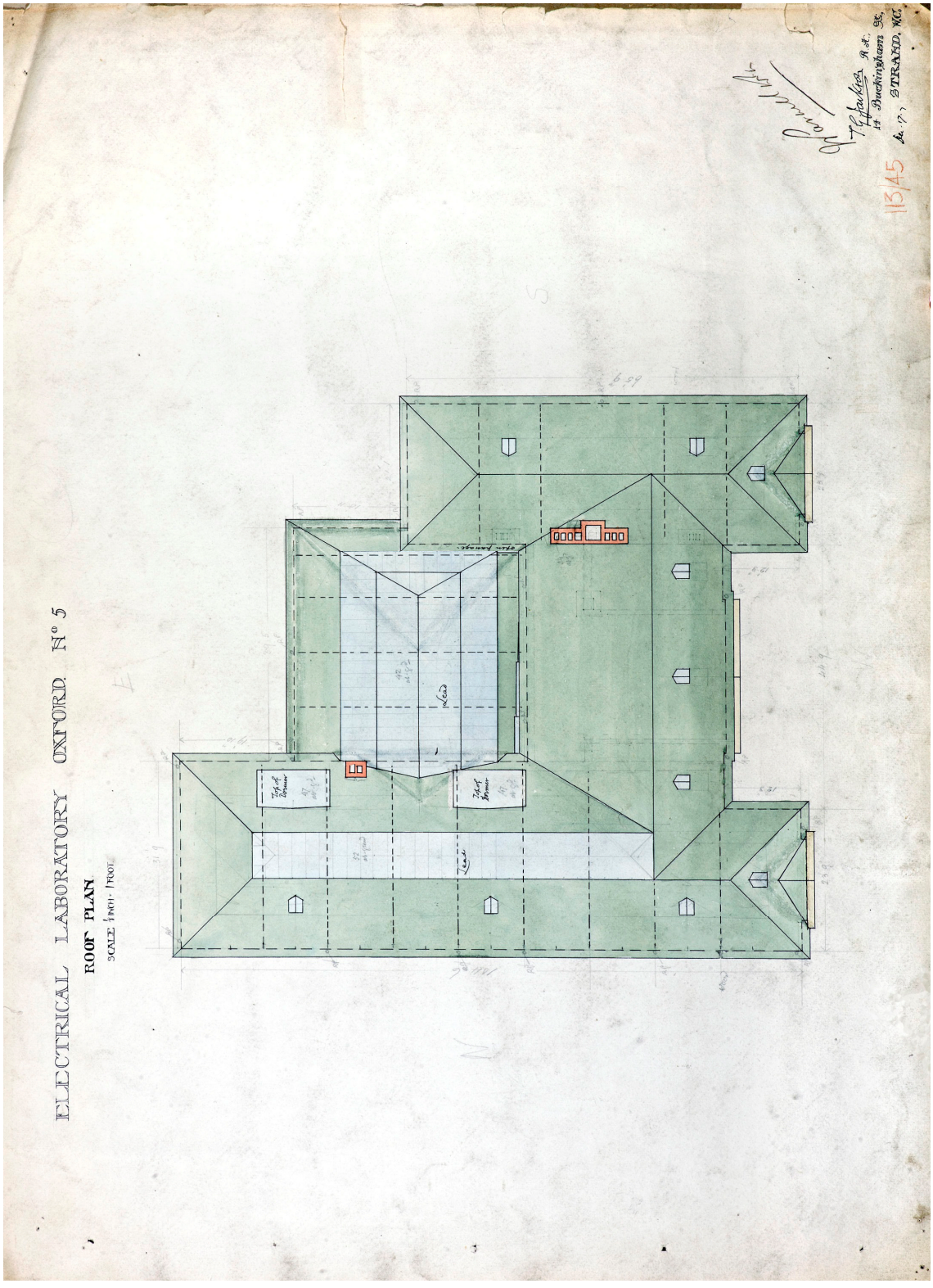


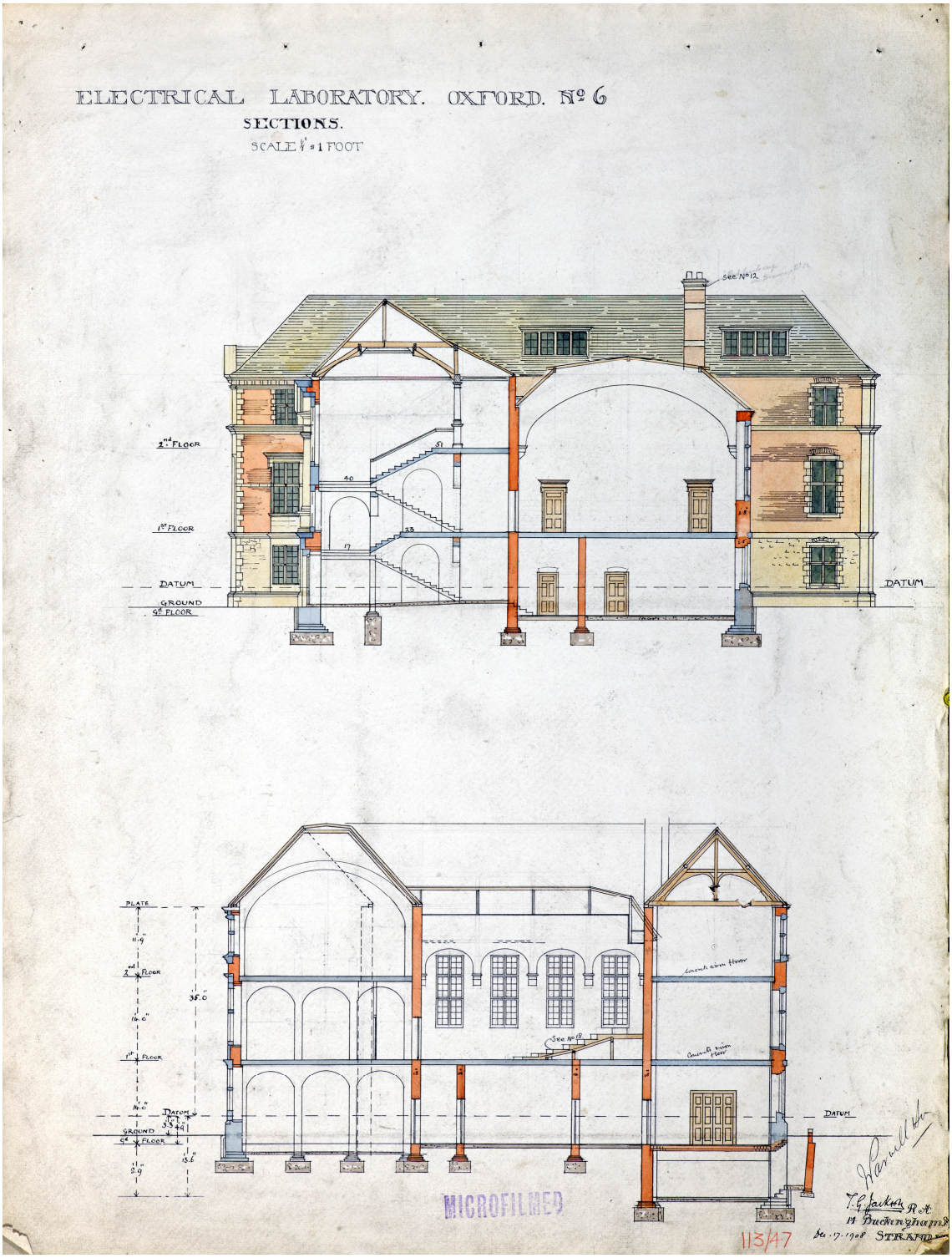

No 2
ELECTRICAL LABORATORY. OXFORD.
GROUND FLOOR PLAN.
VAULT
RESEARCH No 1
RESEARCH No 2
BATTERY ROOM
STORES
DARK ROOM
MENS LAVATORY
WORK-SHOP
CLASS ROOM
NEW
113/43

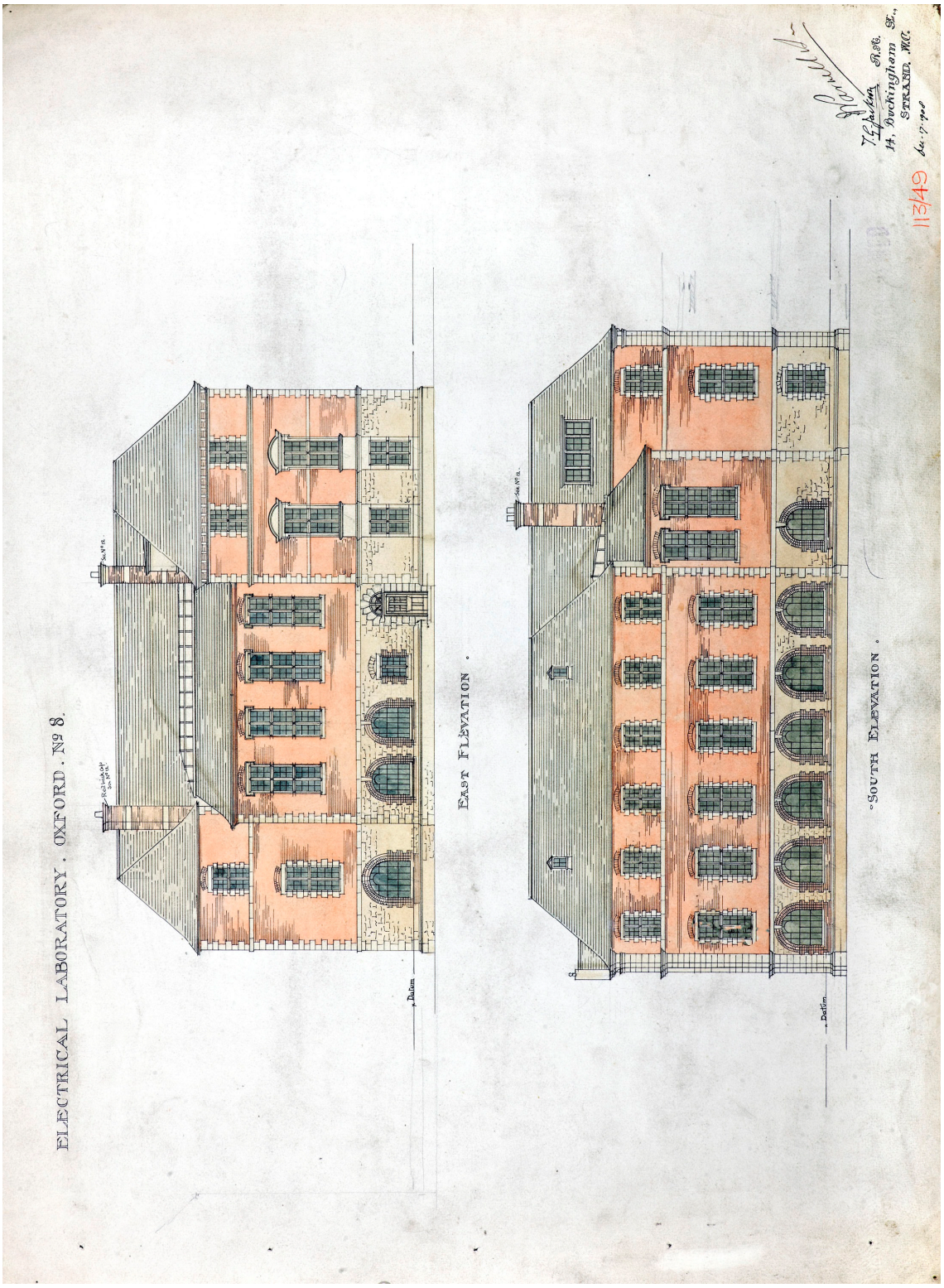

No 22.
Cupboard
Lobby
Students
Ground Floor
Lavatory & WCs
W-C
W-C
Urinals
Arch
Under
Stairs
Lavatory
Research
Room
Gulley


ELECTRICAL LABORATORY OXFORD № 5.
FIRST FLOOR PLAN.
DEMONSTRATORS ROOM
PROFESSORS ROOM
WOMEN'S LAVATORY
LECTURE THEATRE
INSTRUMENTS
PREPARATION ROOM
CLASS ROOM
113/44


ELECTRICAL LABORATORY OXFORD N° 4.
SECOND FLOOR PLAN
RESEARCH
SMALL LECTURE ROOM
STORE ROOM
CLASS
ROOM
SINK
DUMB
113/46


ELECTRICAL LABORATORY OXFORD N° 5
ROOF PLAN
SCALE 1/8TH INCH TO FOOT
13145


ELECTRICAL LABORATORY. OXFORD. Nº 6
SECTIONS.
SCALE ½" = 1 FOOT
See Nº12
2nd FLOOR
1st FLOOR
DATUM
GROUND
GF FLOOR
DATUM
PLATE
2nd FLOOR
1st FLOOR
DATUM
GROUND
GF FLOOR
See Nº18
DATUM
MICROFILMED
113/47


ELECTRICAL LABORATORY . OXFORD . Nº 8.
EAST ELEVATION .
SOUTH ELEVATION .
T. G. Jackson R.A.
14. Buckingham St.,
STRAND. W.C.
1146


UNTO GOD ONLY BE HONOUR AND GLORY
The Worshipful
Company of DRAPERS of
the City of LONDON erected
this building for the promotion of
the Study of Electrical Science and
presented it to the Chancellor Masters
and Scholars of the University of Oxford
on the 21st day of June A.D. 1910
Keddey Ray Fletcher Master
John Barrow
Bernard Francis Harris
Webster Glynes
Gerald Walton Williams
Ernest Henry Pooley
Clerk

Annexes

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8 Annexes

Annexe 1

Development of the University Science Area

- Deane and Woodward's University Museum was built in a neo-Gothic style in 1855-60.

- The original Clarendon Physics Laboratory was constructed to the northwest of the University Museum in 1867-69. This was extended in 1946-58 but the structure has since been enveloped by the Earth Sciences building.

- The Observatory was built to the northeast of the area in 1873-75, and expanded with a lecture room and library in 1877-78.

- The original Inorganic Chemistry Laboratory was constructed in 1877-79, and enclosed within the courtyard of the later departmental buildings constructed 1954-60.

- The original Physiology Laboratory was built to the northeast in 1884-85 (and a new wing added in 1907).

- The Pitt River's Museum was constructed to the east of the University Museum in 1885-86.

- Human Anatomy was constructed immediately to the east of the Museum in 1891-93, and rebuilt in 1954-56.

- Thomas Graham Jackson's Radcliffe Science Library was constructed to the south of the University Museum in 1898-1900 and subsequently extended in 1933-34.

- The Department of Zoology (now housing Atmospheric Physics) and Stevenson and Redfern's Morphology Laboratory were constructed to the north of the University Museum in 1898-1901.

- The Pathological Laboratory was constructed in 1899-1901. This building was handed over to Pharmacology in 1927.

- The School of Forestry and Rural Economy was constructed to the east in 1906-8, and extended in 1912.

- The Townsend Building was built as the Electrical Laboratory in 1908-10.

- The Dyson Perrins Laboratory to the south of the Museum was constructed in 1913-16. This was extended northwards from its eastern end in 1940-41.

- The Sir William Dunn School of Pathology was constructed at the furthest eastern end of the site in 1926, and was extended by Sir Leslie Martin in 1967-9.

- The New Clarendon Laboratory (now the Lindemann Building) was built to the north of the Townsend Building in 1939.

- Physical Chemistry was constructed to the east of the site in 1939-40, and extended in 1958-59.

- Physiology was constructed to the east of the Electrical Laboratory in 1949-53.

- Microbiology was constructed to the northeast of the Museum in 1959-60.

- The Pharmacology Building was constructed directly to the east of the Museum in 1959-61.[14]

[14] All these dates are reliant upon: Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974) 277-9; and Howell, P., 'Oxford Architecture, 1800-1914' in Brock, M.G., and Curthoys, M.C., (eds.), *The History of the University of Oxford,* Vol. VII (Oxford, 2000) 763-777.

Annexe 2

The History of the Clarendon-Townsend Building, its Usage, and the Development of Physics at Oxford

Originally science at Oxford was taught in the dispersed college laboratories. These continued to dominate Oxford science even after the inauguration of the University Museum in 1860. This domination was such that Convocation's denial in 1887 of Robert Bellamy Clifton's (second Chair of Experimental Philosophy from 1866-1915) request for £4,800 in order to construct a specialised electrical laboratory was widely seen as reasonable.[15]

In 1901 John Sealy Townsend was awarded the newly-created Wykeham Chair of Physics, a post he would hold until his forced retirement in 1941. The funding for the post was not entirely secure until New College agreed to supply the annual stipend of £700 in January 1909. There were only a limited number of undergraduate physicists and Townsend's original department was limited to a classroom and workshop within the University Museum, supplemented by the allocation of a further three rooms in February 1902.[16]

Townsend had worked in Cambridge's Cavendish Laboratory from 1895-1900 and, as the numbers of undergraduates reading for honours in Physics increased, he saw the need at Oxford for a specialised, centralised laboratory in this tradition. On 1st June 1908 the Drapers' Company finally made this possible by allocating £23,000 for: 'a new laboratory for the teaching of Physics and Electrical Science.'

On 8th July 1908 J. Augustus Soutter, architect, wrote to the University asking to be allowed to submit a design for the new building,[17] but the commission was given to Sir Thomas Graham Jackson who at that time remained: 'the Oxford architect *par excellence*.'[18] Jackson's design required the creation of a new road around the building, connecting with the Clarendon and Biology laboratories.

After two years of construction, the Electrical Laboratory was opened on 21st June 1910 by Lord Curzon of Kedleston, Chancellor of Oxford University (1907-1925), previous Viceroy of India (1899-1905), and future Foreign Secretary (1919-24). In a letter to W.B. Gamlen dated 17th November 1910 T.G. Jackson calculates the total cost for the build (including heating, lighting, oak fittings in the lecture, and blinds) at £17, 391.

The New Electrical Laboratory quickly became an important working space. In 1913 Henry G.F. Moseley returned to Oxford from his lectureship at Manchester University

[15] Fox, R., Gooday, G., and Simcock, T., 'Physics in Oxford: Problems and Perspectives' in Fox, R., and Gooday, G., (eds.), *Physics in Oxford*, 1839-1939: *Laboratories, learning, and college life* (Oxford, 2005) 18.
[16] Lelong, B., 'Translating Ion Physics from Cambridge to Oxford: John Townsend and the Electrical Laboratory, 1900-24' in Fox, R., and Gooday, G., (eds.) *Physics in Oxford*, 1839-1939: *Laboratories, learning, and college life* (Oxford, 2005) 224.
[17] All letters courtesy of Oxford University Archives.
[18] Ward, H., *History of the Athenaeum*, 1824-1925 (London, 1926) 330.

to conduct private research. It was in the Electrical Laboratory in early 1914, prior to his commission to the Royal Engineers and untimely death at Gallipoli in August 1915, that Moseley completed his famous work on X-rays and the ordering of elements by empirically-demonstrable atomic numbers.

Beyond Moseley's tragic demise, the Great War also meant that the Electrical Laboratory was nearly empty of students. Townsend himself contributed to the war effort by conducting research on wireless technologies for the Royal Naval Air Service, and the teaching areas of the laboratory were given over to the Royal Flying Corps (from April 1916 to December 1918) for their training.[19]

Between the Wars, the Electrical Laboratory continued to flourish under Townsend's leadership, though its dominance was challenged into the 1930s by Lindemann's (Professor of Experimental Philosophy, 1919-40) successes in the nearby Clarendon Laboratory.

Lindemann's success in developing the status of Physics at Oxford resulted in the opening of the second Clarendon Laboratory directly to the north of the Electrical Laboratory in 1939. This marked the beginning of closer collaboration between the disparate Physics departments, leading to the conversion of Townsend's chair to that of Theoretical Physics in 1945.

During the Second World War the Electrical Laboratory was used, much as during the Great War, for the training of RAF (and additionally Royal Corps of Signals) personnel. A letter of 15th November 1943 requested the installation of fluorescent tube lighting within the teaching spaces due to the increased numbers of people using the spaces, but this was denied by the University under the *Discharge Lamp Lighting (Control) Order*, 1943. The newly-knighted Townsend was forced to retire in September 1941 when he refused to oversee the teaching of service-men and was found guilty of misconduct by a University Visitatorial Board.

The Electrical Laboratory remained relatively isolated into the latter half of the 20th Century. It was extended with the construction of the Simon Building to its eastern (rear) end during the 1960s, but this remained the only external addition when Pevsner produced his architectural survey of Oxfordshire in 1974.[20]

The nature of Physics as a technologically-dependant subject means that the requirements of the building have changed substantially throughout its 100 years of use, resulting in substantial internal alteration; however this has enabled the building to continue to function as an important constituent element of the Physics Department, with two of the six Physics sub-departments (Atomic and Laser Physics and Condensed Matter Physics) being spread between the interconnecting Townsend, Lindemann, and Simon buildings which together now form the Clarendon Laboratory.

[19] Lelong, B., 'Translating Ion Physics from Cambridge to Oxford: John Townsend and the Electrical Laboratory, 1900-24' in Fox, R., and Gooday, G., (eds.) *Physics in Oxford*, 1839-1939: *Laboratories, learning, and college life* (Oxford, 2005) 229.
[20] Pevsner, N., and Sherwood, J., *Buildings of England: Oxfordshire* (Oxford, 1974) 278.

Since 2002 the Townsend Building has housed the Institute of Experimental Photonics (part of the sub-department of Atomic and Laser Physics).

Henry G.F. Moseley

The Electrical Laboratory is significant as the setting for one of science's most important discoveries: Henry Moseley's famous research on atomic structures in 1913 and early 1914.

Moseley (**Figure 1**) was educated at Eton and Trinity College, Oxford (using the college laboratory as an undergraduate), where he graduated in 1910. He moved to Manchester where he worked as a teaching assistant and then as a research assistant under Ernest Rutherford. He returned to Oxford in 1913 hoping to secure a teaching position and undertook private research at the Electrical Laboratory. It was here that Moseley bombarded samples of the then-known elements with electrons and measured the resulting wavelengths. He then plotted the square roots of the results against integers on a graph, producing a set of near-straight lines. This allowed him to calculate the atomic numbers of the elements. This had a profound effect on the subsequent development of research in both Chemistry and Physics: proving atomic numbers to be a demonstrable phenomenon (dependent on the number of protons in an atom's nucleus) rather than an arbitrary system of ordering; allowing the identification of elements by x-ray spectography; and paving the way for the development of Quantum Theory.

Against the wishes of his family and the advice of the army, Moseley joined the Royal Engineers upon the declaration of war in 1914. He was shot and killed at Gallipoli on 10th August 1915, aged just 27. It was proposed by Isaac Asimov (1920-92), famed science-fiction writer and academic biochemist, that had Moseley not been killed he would have been awarded the Nobel Prize for Physics in 1916 (a year in which it was ultimately not awarded to anyone), a view that is widely accepted amongst the scientific community.

The Townsend Building remains significant as the setting for this historic discovery, and retains Moseley's original hand-drawn graph (with a signed dedication by Townsend) in the Moseley Room.

Figure 1. Left: Moseley, aged 22, in Trinity College Laboratory shortly after his graduation in 1910. Right: Townsend in his later years

John Sealy Townsend

Townsend (**Figure 1**) was the Wykeham Professor of Physics from 1901 until his retirement in 1941. Townsend is most famous for his development of the falling-drop method for measuring electrical charge and his discovery of the Ramsauer-Townsend Effect: that the mean free path of electrons depends on their energy, a concept central to the understanding of Quantum Theory. The Electrical Laboratory was the setting for the majority of his distinguished research career. Along with Robert Clifton and Frederick Lindemann, John Sealy Townsend is one of the major figures responsible for the development of the Physics Department at Oxford into the world-class resource it is today. The Electrical Laboratory was constructed to house Townsend's department and he was responsible for its early success and development. Of course, in recent years his contribution to the success of this space has been recognised by the adoption of his name.

Annexe 3

Selected Historical Correspondences (Oxford University Archives Reference UC/FF/77/1-2)

Letter dated 8th July 1908:
J. Augustus Soutter, architect, writes asking to be allowed to submit a design for the proposed Electrical Laboratory.

Letter dated 4th November 1908:
D.C.G. Bourne, Secretary of the University Museum, to W.B. Gamlen, Secretary of the University Chest (1873-1919).
'*Since I last saw you on Monday last* [26th October] *I have obtained Mr.* [Thomas Graham] *Jackson's definitive plan for the New Electrical Laboratory and have marked out the course of the new road with the Museum precincts, and have given Mr. Jackson's Clerk of Works permission to clear away all the trees and shrubs standing on the site of the road.*'
Bourne goes on to suggest hiring a contractor to build the road. He says that this may seem hasty, but that it was necessary.

Letter dated 20th November 1908:
D.C.G. Bourne, Secretary of the University Museum, to W.B. Gamlen, Secretary of the University Chest.
Discusses shifting the railings between the Parks and the Museum Precincts.

1908:
Drain from Biology Building replaced to follow route of newly-constructed road.

Proceedings of Hebdomadal Council, dated 30th January 1909:
New College agrees to meet the full annual cost of £700 for the Wykeham Professorship of Physics.

Letter dated 18th July 1910:
J.S. Townsend, Wykeham Professor of Physics, to W.B. Gamlen, Secretary of the University Chest.
'*I noticed today that the workmen at the New Laboratory are bringing the road to the* [University] *Museum departments nearer to the new building than was agreed to by the Museum delegates as shown by the plan that was passed by them. I hope you will give instructions that the road is not to come nearer than 12 feet to the building, which was the distance arranged.*
If it is found desirable to widen the road this can be done by taking some off the grass on the opposite side…'

Letter dated 22nd July 1910:
J.S. Townsend, Wykeham Professor of Physics, to W.B. Gamlen, Secretary of the University Chest.
The value of the apparatus removed from the University Museum is estimated by Townsend as £1,600. It is estimated that with upcoming purchases the total value of the apparatus within the Electrical Laboratory will be £3,000 by Michaelmas term.

In a letter from 10th November 1910, the apparatus is insured for the full £3000.

Letter dated 27th July 1910:
Letter from branch manager (St. Cross, London, branch) of Sun Insurance states that the building is now occupied.

Letter dated 6th August 1910:
R. Edwards, contractor, to W.B. Gamlen, Secretary of the University Chest.
Edwards states his intention to provide requested estimates for constructing a new piece of road (following the upcoming demolition of a corrugated iron shed) and suggests also bringing the existing new road and the drains up to the same condition.

Letter dated 31st August 1910:
General Manager of Norwich Union (Fire Insurance Company Ltd). States that it is his understanding that the Electrical Laboratory (on Parker Road?) is '*now or will shortly be completed by the Builders*.'

Letter dated 17th November 1910:
Telegraph from Thomas Graham Jackson, architect, to W.B. Gamlen, Secretary of the University Chest.
'*The total cost of this building, including heating and lighting, and* £623.8.0 *for the oak fittings in* [the] *Lecture Theatre and* £143.19.3 *for blinds, amount to* £17, 391.'

Letter dated 9th March 1920:
J.S. Townsend, Wykeham Professor of Physics, to Stenning (?).[21]
Townsend refers to the Electrical Laboratory's boiler being repaired in the summer of 1919, but having since leaked again and be in need of repair.

Letter dated 29th June 1920:
The repainting of the external wood and iron work of the Electrical Laboratory is authorised at the cost of '*a little over* £100.'

Letter dated 9th March 1921:
G. Wyatt and Sons, contractors, to Secretary of the University Chest (no longer Gamlen).
Estimates the cost (parts and labour) of replacing the boiler in the Electrical Laboratory at £106.9.3.

Letter dated 13th October 1921:
J.S. Townsend, Wykeham Professor of Physics, to Stenning.
Mentions that one of the ceiling beams in the Electrical Laboratory has split, and that whilst he lacks the expertise to say how serious this is, he thinks it should be repaired before it gets any worse.

[21] This could be Rev. John Frederick Stenning (Dean, Fellow and Lecturer in Divinity and Hebrew, Wadham College), Proctor in 1908 and 1919, and Warden of Wadham from his election in 1927 to his resignation in 1938.

Letter dated 19th June 1922:
J.S. Townsend, Wykeham Professor of Physics, to Stenning.
Townsend reports a small leak in the NW corner of the roof of the Electrical Laboratory '*due to the state off* [sic.]*, or something wrong with the lead.*'

Other relevant correspondences

7th June 1932
Joseph Clews, engineer, to Clerk of Works at University Chest.
Calorifier retubed and refurbished to the cost of £12.10.00 by Clarendon Ironworks.

1933
Letter of 1st February 1933 from C.B.C. Loxley, of G. Wyatt and Son, to Sir Arthur C. McWatters, Secretary of the University Chest.
Partition wall erected in dark room at the request of J.S. Townsend, Wykeham Professor of Physics.
'4.5 *inch Brick Wall, with struck joints each side…,* 10 *feet wide and* 12 *feet high.'*
This cost £6.6.0, with sand and brick provided by the department.

1934
Letter of 25th July 1934 from John Kerr and Co., to J.C. Humphreys, Esq., of the Electrical Laboratory.
Emergency fire hoses installed.

1935
Letter of 15th July 1935 from G.A. Bennett of Electrical Laboratory to Sir Arthur C. McWatters, Secretary of the University Chest.
Alternating Current introduced to '*some rooms of the building*.'

18th July 1935
Letter of 18th July 1935 from Clerk of the University Chest to R. Thomas and Son, painters and decorators
Approval of funds for washing, repairing of cracks, and painting (two coats) of walls in: Large Laboratory North (£86); staircase and corridor (excluding ground floor) (£68); and First Floor Laboratory North (£48.24.00).

1937-38
A long series of correspondences, for example a letter of 7th January 1938 from Sir Arthur C. McWatters, Secretary of the University Chest, to University Registrar.
Permission in principle granted to J.S. Townsend, Wykeham Professor of Physics, to construct an external shed, primarily for the recharging of batteries. When an estimate was actually made the costs came out higher than expected, and even when estimates were brought down to little over £100 the University Chest was still unable to sanction the costs.

15th November 1943
Letter from A.C. McWatters, Secretary of the University Chest to R.T. Lattey, Esq., of the Electrical Laboratory (one of a series of correspondences).

A request for the installation of fluorescent tube lighting in the Electrical Laboratory (due to the increased numbers of RAF and Royal Corps of Signals personnel undertaking classes and lectures there as part of the war effort) is denied under the *Discharge Lamp Lighting (Control) Order*, 1943. It is suggested that lecture theatres are not permitted the installation of these items in wartime.
Lattey had argued in a previous letter the installation of 4 fluorescent tubes to replace 6 100-Watt bulbs would: '*cut consumption from* 600 *to* 320 *Watts, whilst increasing light from* 600 *to* 11,200 *lumens*.'

25th October 1946
Minutes of the Oxford University Chest (extracted from auditor's report).
£55 expended to construct a doorway from the '*existing Electrical Building at a point opposite the present entrance to the Workshop of the Physics Building.*'

4th May 1948
Minutes of the Oxford University Chest (extracted from auditor's report).
The Curators of the University Chest authorise the expenditure of £2, 131.2.3 for the rewiring of the electrical installation and the conversion throughout the building from Direct Current to Alternating Current.

Annexe 4

Sir Thomas Graham Jackson's work in Oxford[22]

New Constructions:	
1876-1883	Examination Schools
1876	Sheldonian Theatre, installation of organ case
1879	Corpus Christi College, new buildings
1879-81	High School for Boys (Old Boys' School)
1880	Trinity College, new buildings
1880-81	University Parks, Cricket Pavilion
1880-81	Christ Church, wooden bridge over Cherwell
1880-83	Lincoln College, Grove Building
1880-1909	Brasenose College, new buildings including South Quadrangle, Western Block, new wing to North Block, and Principal's House
1881	High School for Girls, 21 Banbury Road
1881-82	Somerville College, new block
1883-85	Trinity College, new buildings
1884-5	Corpus Christi College, annexe (and restoration) to Beam Hall
1884-1914	Hertford College, including Catte Street elevation, new block north of quadrangle, North Quadrangle, Chapel, "Bridge of Sighs"
1885-87	Trinity College, President's House
1886-88	Delegacy of Non-Collegiate Students (now Ruskin School of Art)
1895-96	Northgate House (Acland Nursing Home), new wing

[22] Howell, P., 'Oxford Architecture, 1800-1914' in Brock, M.G., and Curthoys, M.C., (eds.) *The History of the University of Oxford,* Vol. VII (Oxford, 2000) 763-777; Lankester, J., *Sir Thomas Graham Jackson, Bart., R.A.,* 1835-1924: *An Exhibition of his Oxford Building, Examination Schools, Oxford,* 1983 (Oxford, 1983) 43; Whyte, W., *Oxford Jackson: Architecture, education, status, and style*, 1835-1924 (Oxford, 2006) 124.

1895-97	Local Examinations Delegacy (12, Merton Street)
1897	Radcliffe Science Library
1900	Queen's College, Chemical Laboratory
1900	Radcliffe Observatory, new tower and restoration
1908-10	Electrical Laboratory
1914	Bridge of Sighs, Herford College

Restoration Work:

1877-1915	Old Bodleian Library
1880	Radcliffe Camera
1883-84	Oriel College, chapel remodelled
1884-85	Corpus Christi College, Beam Hall restored
1885-86	Wadham College, repairs to chapel and installation of organ case
1886-89	Merton College, chapel and sacristy restored
1887-94	Frewin Hall
1889-91	Lincoln College, hall roof and fireplace restored
1891	Botanic Gardens
1892-96	St. Mary the Virgin
1894-5	Brasenose College, chapel restored
1896-98	Old Ashmolean Museum
1906-07	Wadham College

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