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# DOUGLAS WALLACE BISHOPP - SEVENTH DIRECTOR OF THE GEOLOGICAL SURVEY OF IRELAND: HIS APPOINTMENT 1940 AND RESIGNATION 1950

by Colin B. Wilson

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**Abstract:** D.W. Bishopp was Director of the Geological Survey of Ireland for the important decade of the 1940s. This paper summarises new information that has recently become available concerning the Competition for this appointment and throws light on social and political attitudes pertaining at the time. The reasons for his resignation are outlined. *Journal of the Mining Heritage Trust of Ireland* 10, 2010, 21-28.

## INTRODUCTION

Douglas Wallace Bishopp (1900-1977) was the Director of the Geological Survey of Ireland (GSI, the Survey) for ten years from late 1940. Owing to the absence of relevant documentation at the Survey its official history, *North from the Hook* (Herries Davies, 1995) contains little detail concerning his appointment. The author has recently, with the assistance of the Freedom of Information Liaison Officer at the Public Appointments Service, located the 1939-40 competition file for the post. The file gives an interesting insight into the Civil Service selection procedures and social and political attitudes of the time, and also into the envisaged role of the Director.

In Department of Industry and Commerce files deposited in the National Archives there is extensive coverage of the problems facing Bishopp during his directorship. Those that had a bearing on his decision to resign are explained in Part 2 of this paper.

## PART 1: ARRIVAL

### Preliminaries

By July 1939 steps were under way to fill the vacancy to be created in November by the retirement of Timothy Hallissy, the 70 year old Director of the Survey. At that time the Survey was a branch of the Department of Industry and Commerce (the Department). His successor was to be selected by a competition administered by the Civil Service Commissioners in accordance with normal Civil Service procedures. After the Department received the sanction of the Department of Finance for the holding of the competition and the salary scale, various details had to be agreed between the Commissioners and the Department. Their deliberations culminated in the Regulations governing the competition, the Conditions of Service and the precise wording of the advertisement.

One of the first matters to be settled concerned women applicants. The Commissioners suggested the Competition should be restricted to male candidates on the ground that: '....it might be necessary to examine old mineshafts, which it is maintained would be quite unsuitable for a woman officer.' This was not

agreed, women could apply but, as was customary at the time, had to be single or widowed, resign on marriage, and the salary was significantly less than for a man, taking more years to reach the top of the scale. The Minister of Industry and Commerce (the Minister) considered it unnecessary to insert a nationality clause in the Regulations as suggested by the Commissioners and further advised that in order to secure applicants of the type desired for the post it should be advertised in the journal *Nature* in addition to four Irish newspapers. At the time the Minister was Seán Lemass.

The salary was not an issue; it was to be the same as the outgoing Director had enjoyed; however it was represented that: '...the post of Director is of greater importance than would be suggested by the salary, that it is a key position and that inaccuracy in its reports might involve the State in considerable loss.' There was no suggestion the salary should be increased accordingly.

### First Advertisement

The following advertisement (see next page) appeared in the *Irish Press*, *Irish Independent*, *Irish Times*, *Cork Examiner* and *Nature* in early November 1939:

The upper age limit with an extension of two years for an established Civil Servant and the wording of essential qualification (a) were framed to render the Survey's geologist Thomas John Duffy (1890-?) an eligible candidate. In his natural science course at the Royal College of Science for Ireland he took geology for three terms in the third year but did not sit a paper in that subject in the final examination. The post might have been filled within the year but the response to the advertisement must have been poor for it was decided to re-advertise. This must have disappointed Duffy and the other internal candidate James Anthony Gerrard McCluskey (1904-1963), at that time Assistant Economic Geologist not in the Survey but in the Department.

### Second Advertisement

A letter of 1st February 1940 to the Commissioners noted that

## COIMISIÚN NA STÁT-SHEIRBHÍSE.

Position Vacant:- Director of the Geological Survey.

Application forms for and full particulars of a vacancy in the Department of Industry and Commerce for a Director of the Geological Survey may be obtained free from the Secretary, Civil Service Commission, 45, Upper O'Connell Street, Dublin.

Age Limits: 35-48 years with extension of two years for established Civil Servants.

Salary:-

Man: - £500 - £20 - £700 a year plus cost-of-living bonus.

Woman: £400 - £15 - £600 a year plus cost-of-living bonus.

At present the bonus on £400 is £158.1s. and on £500 is £184.

Essential Qualifications:

(a) Degree in Science, Geology being one of the subjects taken in the University Course, or an equivalent to such degree.

(b) Considerable experience of geological work in the field.

Latest date for receiving completed application forms:-  
21st November, 1939.

the period previously allowed for the return of application forms was insufficient for the return of overseas applications and that the only technical paper to carry the advertisement circulated in purely scientific rather than in practical professional circles. The Commissioners were asked to re-advertise in a larger number of technical and professional papers, allowing six weeks for the return of applications. The advertisement, now with a cost-of-living bonus increased by 13% and a closing date of 12th April 1940 was placed in the following publications in addition to those on the previous list: London Times and Daily Telegraph, Geological Magazine, Mining Magazine, Colliery Guardian, Engineering, Engineer and Iron Trades Advertiser, Petroleum World. The greatly increased coverage attracted seven applicants, all men, and all were called for interview.

## The Competition

It was the responsibility of the Commissioners to ensure the appointee was satisfactory with regards to age, health, character and possessed the requisite knowledge and ability to discharge the duties of the post. The task of assessing the merits of the candidates in respect of knowledge and ability was delegated to an Interview Board. The Board comprised a chairman representing the Department, a language expert and two technical examiners. The latter were two academics Prof. H.J. Seymour, Geology Dept. University College Dublin and Prof. L.B. Smyth, Geology Dept. Trinity College Dublin. Prof. W.J. Pugh, Geology Dept. University of Manchester (later Director of the Geological Survey of Great Britain, and Sir William) would have been an examiner but was unable to attend. The interviews took place on the 27th June 1940. Based upon their written statements and performance at the interview, the Board had to assess and mark the candidates for two essential and four desirable qualities in accordance with an approved marking scheme. Each candidate was given half an hour starting with the two established civil servants Duffy and McCluskey followed by the five external candidates. Of the latter two were

considered below par and one was a no-show. The Board judged four candidates qualified and suitable, the results in order of merit, here expressed as a percentage of the total available marks:

	Age	Score %
Hudson, R.G.S.	44	86.2
Bishopp, D.W.	39	67.2
Duffy, T.J.	50	53.4 but see below
McCluskey, J.A.G.	36	53.4

At this stage the work of the Board was not complete; Regulation 2 had still to be applied:

The best qualified candidate with a competent knowledge of Irish will, if otherwise suitable, be recommended by the Commissioners to the Minister for appointment. If no qualified and suitable candidate with a competent knowledge of Irish is available, the candidate otherwise best qualified will, provided he/she is suitable, be recommended for appointment, a preference being given to qualified and suitable candidates with a good knowledge of Irish.

The regulation appears to be capable of only one interpretation, giving an absolute preference to a candidate with a competent knowledge of Irish. In Duffy's case he was judged to have a good knowledge of Irish and to his score was added 10% of the average score of the nominated candidates. This brought his score to 60%, not sufficient to bring him into second place.

Two Survey geologists were underage for the competition, Mark Anthony Cunningham (1908-1980) and Michael Francis O'Meara (1912-1986) at 32 years and 28 years respectively.

Robert George Spencer Hudson (1895-1965) had a first class honours degree in geology from the University of London 1920, that was followed by a M.Sc. in 1922 and D.Sc. in 1929. After a spell on the staff of University College, London, he moved to the Geology Department at the University of Leeds where he was appointed to the chair of geology in October 1939 with a salary of £900 per annum. A distinguished palaeontologist (the Carboniferous of Northern England) and a prolific writer, by 1940 he had published over 40 papers. However, before he could be appointed he had to satisfy the Commissioners with regard to age, health and character. He stumbled at the last hurdle, the file merely stating in one place that he was rejected on grounds of character and in another that it was noted he had been declared ineligible. A letter giving an explanation is referred to but is missing from the file. His 'I regret to inform you' letter enclosing his birth certificate is dated 30th September 1940, three months after his interview.

Hudson had a complicated private life, explained in a recent book by a son, William, (Hudson, 2008) but too complicated to go into detail here. Suffice to say that at the time of the interview, June 1940, he had three families and seven children. He was married but separated. It appears the Leeds University authorities were persuaded to dispense with the services of its newly-appointed Professor of Geology in response to complaints concerning his private life. Hudson's letter to the University offering to resign is dated 19th March 1940 and was

accepted immediately. The Commissioners' check on Hudson's character must have revealed his unconventional life-style, either through a specific enquiry prompted by his response to an interview question or by a referee.

In October 1940 Hudson took up a post as a Research Fellow at Leeds University, carrying a salary of £500 per annum. He went on to a notable geological career. In 1958 he was awarded the Murchison Medal by the Geological Society of London and in 1961 he was elected Fellow of the Royal Society. From 1961-65 he was Professor of Geology and Mineralogy, Trinity College Dublin, and an account of this period can be found in Wyse Jackson (1994).

The successful candidate, Bishopp, graduated in 1923 in mining and mining geology at the Royal School of Mines, Imperial College London. His undergraduate overseas experience was at the Panasqueira Mines, Beira Baixa, Portugal - tin and wolfram, and at the Sulitjelma Mines, Norway - pyrite. He won the 1924 William Fresheville Prize awarded by the Institution of Mining and Metallurgy for his paper on the tectonic geology of the Sulitjelma deposits. After graduation he spent two years as a mining geologist at the famous Zacatecas Mine, Mexico - copper, lead, zinc and silver. Thereafter, he held posts in the Gold Coast, Tanganyika and South Africa with two stints at the Rhodesia Museum, Bulawayo. At the time of his interview he had been four years with the Geological Survey of British Guiana (now Guyana). There it was the practice for geologists to take two parties each year into the field, preparing their reports during the rains. The reports were published in the form of Bulletins with maps in a back pocket. Bishopp has been categorised as an economic, mining, structural and colonial geologist, and a geomorphologist. A bibliography of his work is in the appendix. It amply demonstrates he was a member of the international geological community.

Bishopp's daughters relate (personal communication) that the reason the family left British Guiana was the deteriorating health of their mother. She found the heat and humidity extremely trying and when expecting her second child was advised by her doctor to seek a more equable climate. The Bishopp's second child was born in Wales in 1940, their third and fourth, the last, in Ireland.

In due course the Commissioners were satisfied with Bishopp on all counts and at the end of November wrote to the Department requesting his approximate start date. Perhaps it was a sign of the times, when spies were operating in neutral Éire, for the letter concluded with a request: 'An address form completed by the candidate is enclosed. The handwriting should be compared with the handwriting of the person who takes up duty and any apparent discrepancies should be reported to the Commissioners.' The Department offered him the appointment from the 16th December. In the event his first day in post was the 24th, six months after his interview. His two year probationary period as required by Conditions of Service No. 3 had begun. His duties are set out in Conditions of Service No. 4:

The Director will be in immediate charge of the Geological Survey and will be responsible for the safe

custody of the Survey property and for the proper management of its affairs. He will be required to edit all publications of the Survey, whether maps, sections or memoirs, and also to advise the Department on matters involving the application of geology to economic problems or relating to the commercial development of mineral deposits. He will also be required to perform any other duties assigned to him from time to time by direction of the Minister for Industry and Commerce as appropriate to the post, which may include advisory, etc. work for other Departments.

Considering the run-down state of the Survey, graphically described in *North from the Hook* (Herries Davies, 1995), the low salary, and WWII in progress, the Commissioners were fortunate to have such strong candidates in Bishopp and Hudson.

## Nationality

The Civil Service Commissioners had suggested the insertion of a nationality clause in the competition regulations and that the advertisement be restricted to four Irish newspapers. Perhaps they considered that on nationalistic grounds the Director of the Geological Survey of Ireland should be an Irish citizen, if so there is an incongruity in inviting a professor from an English university (Prof. W.J. Pugh, Manchester) to sit in judgement over the candidates. In August 1939 Seán Lemass decided that a nationality clause was unnecessary, a month before he was appointed Minister of Supplies and Seán MacEntee replaced him at the Department of Industry and Commerce, moves occasioned by the outbreak of the Second World War. The competition was therefore open with no discrimination on grounds of nationality.

Herries Davies (1995) suggests there will have been some difficulty in endorsing the appointment of an Englishman as Director: 'That the Irish Authorities had gone to the trouble of looking overseas for their Director and that, despite his English background, they had appointed a confirmed economic geologist, seemed to make as clear as crystal that dynamic and expert action was being envisaged.' Perhaps this assessment was based, at least in part, on an interview given by the Fianna Fáil politician Seán Lemass to the *Sunday Chronicle* (a British newspaper) on the Free State's industrial aims, reported in the *Irish Press* 25th April 1933. The following section, on minerals, is quoted in *North from the Hook*:

As regards raw material, we have large coal areas, but the quality of the deposits has yet to be established. We are arranging for the exhaustive examinations as a preliminary to the development of iron, copper, and zinc deposits. We have found the geological reports prepared by the British Government to be most unreliable, and I think it fair to assume that they were deliberately made so in order to prevent development in those directions.

Too much should not be read into Lemass' aspersion on the quality of British Government geology reports. It may have gone down well in certain quarters, and indeed was probably a widely held view in Ireland at the time, but action speaks louder than words. Later in the 1930s Lemass approved the

appointment of the London based consulting mining engineers, Ronald Johnstone & Son to explore the Slieveardagh coalfield and the gypsum deposits in the Kingscourt-Carrickmacross area. Its reports are dated 1937 and 1940 respectively (Bishopp 1943). Furthermore in 1946-47 he approved the appointment of three British consultants to advise Mianraí Teoranta (Minerals Limited) the state sponsored and funded minerals exploration and development company: Andrew Pearson a London based mining consultant, Prof. W.R. Jones professor of mining geology at the Royal School of Mines and Prof. J.A.S. Ritson professor of mining at the same establishment (GSI's DMS Mining Reports). (On the abolition of the Department of Supplies in July 1945 its functions were transferred to the Department of Industry and Commerce and Seán Lemass reverted to his old position as Minister for Industry and Commerce).

## PART 2: DEPARTURE

### Letter to Eamon de Valera

An article in the Sunday Press that referred to his resignation and the work he did in Ireland prompted Bishopp to write to Eamon de Valera in January 1951 (NA S13085B/1), just four months after his departure. He introduced himself as follows: 'When my Chief the late Mr. R.C. Ferguson and I had lunch with you on the occasion of closing the Emergency Research Bureau, I did not expect to resign the direction of the Geological Survey of Ireland after ten years pensionable service, I had intended to devote the rest of my life to it.' (Ferguson who had been the Secretary of the Department retired in 1946 and died shortly afterwards. De Valera set up the Emergency Scientific Research Bureau in February 1941; it closed in March 1945. Bishopp was one of many unpaid scientists and engineers who assisted in the work of the Bureau). He continued by listing the reasons for his resignation:

- (a) The continued neglect of and lack of support for the Geological Survey, which stands far below the minimum consistent with the needs of the country or the standards observed elsewhere.
  - (b) Interference with my official work and damage to my private life on account of my British nationality.
  - (c) Side-tracking of the Survey's normal work into unorthodox channels and attempted regulation of it by officers not qualified to do so.
  - (d) Pressure put on the Survey through its Minister to give preferential treatment to certain private interests, disclose confidential information, and tamper with or distort scientific reports.
- This (d) was the most serious, since our scientific integrity was not respected by our own Department.

There followed a critique of the state of the Survey with suggestions how it might be revived. Details are now given of a withdrawn resignation and the paper concludes with examples of the factors Bishopp must have taken into account in deciding to resign in 1950. His last day at 14 Hume Street was the 12th September. By leaving before the age of 60 he forfeited ten years of accrued pension.

## The 1944 Resignation (Withdrawn)

When the Economic Geologist at the Department retired in June 1938 McCluskey the Assistant Economic Geologist assumed the duties of the senior officer, a situation that continued until the end of January 1941 when he transferred to the Survey as a Geologist although retaining his old job title. Likewise at the Survey Duffy had assumed the Director's duties during the interregnum between the retirement of Hallissy in November 1939 and the arrival of his replacement at the end of December 1940. Both McCluskey and Duffy were on the salary scale £150 - £400. Bishopp supported their request for monetary recognition for the extra duties and after prolonged bargaining with the Department, the need for which Bishopp regarded as a disgrace, McCluskey was awarded £150 and Duffy £75. Duffy was promoted to Senior Geologist in May 1941. However there were strings attached to McCluskey's award apparently debarring him from applying for promotion and it was on his behalf and the principle involved that Bishopp tendered his resignation to the Secretary of the Department on 21st October 1944 (NA T.I.A. 200/58). Evidently the bar was lifted and the tendered resignation withdrawn. McCluskey received his promotion to Senior Geologist 18th December 1945.

## Family Accommodation

During his ten year sojourn in Ireland Bishopp and his family had five homes, all rented:

Jan. 1941 - May 1942 : Moyhora, Greystones, Co. Wicklow

June 1942 - May 1948: 14 Willbrook Road, Rathfarnham, Dublin

May - June 1948 : Very temporary quarters at Crettyard, Co. Leix

June 1948 - Mar. 1949: A farm at Dysart, Castlecomer, Co. Kilkenny

Mar. 1949 - Sept 1950: 11 Abbey Road, Kill O'Grange, Dun Laoghaire, Co. Dublin

At the time of Bishopp's appointment there was no provision in the terms and conditions for assistance with accommodation for an appointee from overseas. Rents rose sharply during the Emergency (WWII) and Bishopp was fortunate to find a property in Willbrook Road at a rent he could afford. Rents were controlled at that time and in due course the landlord wished to benefit from the current rental value, beyond Bishopp's means. This he could do if he gained possession and re-let. He took Bishopp to court and won, a judgement confirmed on appeal, and Bishopp was dispossessed on 24th May 1948. Months before this occurred there was lengthy correspondence between Bishopp and the Department, Bishopp hoping for some assistance from his employer. When it was not forthcoming he wrote to the Taoiseach, John A. Costello (NA 97/9/628) apparently without success. He explained the problem and pointing out that undertakings such as the E.S.B. and Messrs. Guinness provided housing for technical staff when necessary and Mianraí Teoranta had had to do so for its new Chief Engineer. The view expressed by one of the judges ruled Bishopp and he related it in his letter to the Taoiseach: '...the view expressed by the Judge was that as a British citizen I had come here in order to evade war risks with the intention of returning to employment in Britain after the war, and that the renting of the house had

been for temporary convenience thus disabling the protection afforded by the Rent Restriction Acts.' Evidently he did not have the same security of tenure as an Irish citizen.

He was sufficiently anxious about not having a roof over his family's head to mention it in a letter to James Phemister of the British Geological Survey (BGS GSM 2/651) when writing on geological matters. It sums up his predicament: 'I have since had a reply from our Department (presumably approved by the Minister) containing a final refusal to take any action about this business of housing. It looks as if my career in Ireland is about to be suspended or to end altogether. There is of course plenty of accommodation to be had in an uncontrolled black market. I am hoping that some practical solution will be forthcoming but we have only two months left in which to find one.'

Priced out of Dublin and after a brief stop in Co. Leix the family spent ten months on a farm at Castlecomer, Co. Kilkenny, 64 miles from Dublin. Living on a farm may have suited his children but their education is likely to have been a worry for their parents. For Bishopp the location must have been highly inconvenient because the Survey was only part way through the largest single project of his directorship, a £44,000 drilling campaign in the Kingscourt - Carrickmacross gypsum field and related studies. It occupied O'Meara and Cunningham virtually full time. Drilling by the Swedish firm of Craelius started in April 1947 and on completion of 22,428 ft (6836 m) finished in March 1950. The related studies included mapping. The 1948 field season was O'Meara's sixth mapping drift and solid in the area and he continued on the task for several seasons after Bishopp's departure.

His housing difficulty left a lasting disagreeable impression on Bishopp. Writing in response to a letter from O'Meara in 1971 (GSI archives), a year after his retirement, he recalled: 'The last year or so of my life with the Survey was rendered intolerable with housing difficulties, or I think I would have stayed; but I had then four very young children.'

## Staffing

By early 1943 the Department of Finance had sanctioned three extra staff for the Survey, a geophysicist and two geologists, however the posts were not advertised until 9th November 1944 but no appointments were made. The posts were re-advertised in 1946 and a competition held in July. There were only two candidates for the three posts and both were deemed unsuitable. Bishopp dispatched another minute to the Department complaining that the salaries on offer were too low. No new staff joined the Survey during Bishopp's directorship. In his 1951 letter to de Valera, Bishopp in a paragraph heading Staff, noted: 'I was in contact with about four well-qualified young Irish geologists between 1940 and 1950 who would have liked to join us; the pay and prospects were useless to them, and they all went overseas.' However Bishopp's efforts eventually bore fruit for which he must be given credit. By the time he left salaries were sufficient to attract suitable staff. The first to join was Miss Dilys Jones (1929-?) newly graduated from Manchester University who joined in September 1951, eight years after the Survey received sanction for additional staff.

## New Premises for the Geological Survey

14 Hume Street, Dublin, the home of the Survey from 1870 to 1984 was built c.1777 for domestic purposes. By the time of Bishopp's arrival the accommodation was unsuitable for a Survey with up-to-date aspirations. During the Emergency the provision of alternative more suitable accommodation was out of the question, however Bishopp pressed for 2000 sq. ft. (186 sq.m) to display and use as a working collection the Survey's collection of rocks, minerals and fossils stored since 1924 in the basement of 14 Hume Street. The Office of Public Works made genuine efforts to find space in an existing building in central Dublin but without success (NA T.I.A. 200/36).

By mid-1947 there was a proposal acceptable to the Survey and the Department to house the Survey in a purpose designed building located in the grounds of Lissonfield House fronting Lower Rathmines Road. In February 1948 after 16 years in office the Fianna Fáil government under Eamon de Valera was replaced by an inter-party government under John A. Costello, Fine Gael. It introduced austerity measures, financial stringency was the order of the day. The Survey's Lissonfield House project was deferred, in the event not to be revived. It was just one of several projects that were deferred or cancelled. For Bishopp and the Survey the writing was on the wall.

## Twigspark

Twigspark is a townland in Co. Leitrim about 3km NW of Manorhamilton. In Cole's memoir on mineral resources (Cole, 1922) it and the surrounding area is listed under both copper and lead and a silver mine is mentioned. Mining was carried out in the 19th century, undoubtedly on a small scale. In 1948 the Department received an application for a lease to mine in Twigspark and five adjoining townlands, the minerals being in State ownership. A detailed account of what followed is given in Departmental files, NA T.I.M. 195/445 & 445A.

Briefly, there was a discussion within the Department and the Survey, in writing, as to whether it was appropriate to give the applicant a lease to mine as requested, offer a licence to prospect, or neither. The advice of the Director of the Survey was that until a programme of exploration was undertaken with positive results, the minerals were a mirage and under existing legislation it was only appropriate to offer the applicant a licence to prospect. Initially this was also the view of the Department but at this juncture a member of the Dáil intervened on the applicant's behalf. A lease was granted effective the 1st January 1950. For Bishopp it was the last straw. The lessee then sold his interest to a mining company incorporated for the purpose, a transaction not possible with a State prospecting licence. No mining was carried out only limited prospecting and by July 1954 the company had gone into voluntary liquidation.

## Acknowledgements

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## REFERENCES

### Abbreviations:

BGS British Geological Survey  
DMS Document Management System (GSIs)  
GSI Geological Survey of Ireland  
NA National Archives (Ireland)

- BGS GSM 2/651 Mainly 1940s correspondence between the GSI and BGS. Letter to J. Phemister from D.W. Bishopp 15th March 1948.
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- GSI archives: Letter to Michael O'Meara from D.W. Bishopp 27th August 1971 in response to a letter 6th August from O'Meara.
- GSI DMS MR 000421 *Corporate Government* p.181 & MR000549 *Mine Development(Avoca)* p.241-5: Appointment of consultants to Mianraí Teoranta.
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- Hudson, W. 2008. HUD: *The Life and Work of Robert George Spencer Hudson, FRS.* CreateSpace. pp.117
- NA 97/9/628 Letter from D.W. Bishopp to the Taoiseach (John A. Costello) 19th April 1948 concerning his housing difficulty. Refers to court judgements and various Departmental minutes.
- NA CS13/29/30 1939/40 Open Competition, Post of Director of the Geological Survey, Department of Industry and Commerce.
- NA S13085B/1 Letter from D.W. Bishopp to Eamon de Valera 21st January 1951 concerning his resignation and the state of the Survey.
- NA T.I.A. 200/58 Complaint by Mr. Bishopp that GSO (Geological Survey Office) is under staffed and under equipped.
- NA T.I.M. 195/445 Mr. Thomas Thornton, Rusheen, 27 Shantalla Place, Galway. Application for a mining lease in respect of Twigspark and other townlands in Co. Leitrim.
- NA T.I.M. 195/445A The Thornton Mining Co. Ltd. Shanvans Manorhamilton Co. Leitrim, Mining Lease of Twigspark, Statutory Returns and Dead Rents.
- NA T.I.A. 200/36 Geological Collection of Rocks and Fossils. Question of Storage in National Museum.
- Wyse Jackson, P.N. (editor) 1994. *In Marble Halls: Geology in Trinity College Dublin*, Department of Geology, Trinity College Dublin. pp.135

Colin Wilson is a graduate of Trinity College Dublin where he studied civil engineering 1955-58. Now retired, he researches aspects of mineral exploration and mining in Ireland in the 20th century. This article is part of a wider study of the work of D.W. Bishopp whilst Director of the Geological Survey of Ireland.

## APPENDIX

### A bibliography of Douglas Wallace Bishopp, Geologist (1900 - 1977)

#### Norway

*Tectonic geology of the Sulitjelma pyrite deposits, in Norway, in relation to their genesis.*  
Trans. Inst. Mining & Metallurgy, Vol. 33, 1923-4, pp. 136-58

#### British Guiana

*Preliminary Report on Quartzstone-Waiamu Area, Cuyuni River.*

British Guiana Geological Survey, Bulletin No. 5, 1937, pp. 14, maps

*Report on the occurrence of Manganese Ore at Saxacalli, Lower Essequibo River.*

British Guiana Geological Survey, Bulletin No. 6, 1937, pp. 4, maps.

*The formation of laterite*

Geological Magazine Oct. 1937, 880(74), 442-444

*Memorandum on the occurrence of Bauxite in British Guiana, compiled....from reports on the examinations carried out between 1917 and 1921 by E. E. Winter....and from other sources.*

British Guiana Geological Survey, Bulletin No. 8, 1938, pp. 66, 1 map.

*Report on the Area between Quartzstone Head, Aremu Mine and the Puruni River near Peters Mine.*

British Guiana Geological Survey, Bulletin No. 9, 1938 pp. 20, 1 map.

*Preliminary Report on the Mazaruni-Morabisi-Paiyuka-Puruni Quadrangle*

British Guiana Geological Survey, 17/8/39, pp. 29, map and photographs. Not published.

*The Geology and Geography of the Towakaima Region, Upper Barama Valley, North West District, 1937-1938.*

British Guiana Geological Survey, Bulletin No. 16, 1941, pp. 28, 1 map.

*Some problems of geomorphology and continental relationships in British Guiana.*

Geological Magazine, July-Aug., 1940, 77, pp. 305-329, Discussion June 1941, 78, pp. 238 - 240 (Reply to criticism by N.R. Junner of certain statements made in reference to the geology of Gold Coast, West Africa) and June 1942, 79, Issue 3, pp. 203-206 (Reply to criticisms of S. Bracewell, affirming the correctness of his observations).

*Aerial reconnaissance over dense forest*

Mining Magazine (London) August 1940, 63(2), 76-79.

With E. R. Pollard, C. N. Barron. *The Bauxite Resources of*

*British Guiana and their Development.*

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## Ireland

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