

The geological foundation of the Turner Valley Oil and Gas Field provided by Dr. John Allan

Willem Langenberg, University of Alberta

Summary

The appointment of John Allan as the first Professor of Geology at the University of Alberta in 1912 was instrumental for the discovery of the Turner Valley Oil and Gas Field in 1914.

Introduction

In 1912, four years after the founding of the University of Alberta, Henry Marshall Tory appointed John Allan as the first Professor of Geology at the University. As Tory envisioned, this appointment helped to define and expand the role of geology in the development of Alberta's natural resources. This appointment set the stage for the discovery of the Turner Valley Oil and Gas Field in 1914. In addition to his work as a Professor of the University of Alberta, John Allan was a founding member of the Scientific and Industrial Research Council of Alberta in 1921. He was Director of the Research Council's Alberta Geological Survey from 1921 until his retirement in 1949. For the profession, he was a founding member of the Canadian Society of Petroleum Geologists (CSPG, then known as Alberta Society of Petroleum Geology) and its first Vice-President in 1927.

Theory and/or Method

The University of Alberta Archives contains about 7100 photographs (prints and negatives) taken by members of the Department of Geology, chiefly by John Allan. John Allan kept meticulous field notes and numbered his photographs. These photographs document the survey trips undertaken by John Allan in his efforts to describe Alberta's mineral resources, forming the foundation of the energy industries now active in Alberta. From this collection, 82 photographs were selected for a publication, which gives a flavour of the work that John Allan accomplished in Alberta (Langenberg and Cruden, in press).

Examples

John Andrew Allan was born in Aubrey, Quebec, in 1884. He studied at McGill University in Montreal and at the Massachusetts Institute of Technology in Boston, where he obtained his Ph.D. in geology in 1912. In this year, four years after the founding of the University of Alberta, Henry Marshall Tory appointed John Allan as the first Professor of Geology at the University. He developed courses in geology and founded the Departments of Geology and Mining Engineering. As Tory envisioned, this appointment helped to define and expand the role of geology in the development of Alberta's natural resources.

In addition to his work as a Professor of the University of Alberta for thirty-seven years and Chairman of the Geology Department, John Allan was a founding member of the Scientific and Industrial Research Council of Alberta in 1921. He was Director of the Research Council's Alberta Geological Survey from

1921 until his retirement in 1949. He continued consulting and advising until his death from heart failure in 1955.

As Director of the Survey, John Allan published many reports on Alberta's energy resources. John Allan's students, Doug Layer and Charlie Stelck, were working for Imperial Oil when this company discovered this oil field. They published papers on its geological history and origin (Layer et al., 1949). Many more of John Allan's students discovered oil and gas fields in Alberta. As a Professor of the University, not just of geology, John Allan was concerned about the overall well-being of his students. He wanted them to have a rounded education, including English and Ethics as well as the Sciences. He also employed students extensively for field work through the Alberta Geological Survey. For the profession, he was a founding member of the Canadian Society of Petroleum Geologists (CSPG) in 1927 and the Association of Professional Engineers and Geoscientists of Alberta (APEGA) in 1920; and APEGA's President in 1930.

John Allan loved the mountains and spent a lot of time in them. In an appropriate tribute to his work in the development of Alberta's resources, Mount Allan in Kananaskis Country is named after him. It has views of coal deposits and hydroelectric developments. A memorial by P.S. Warren (1956) lists over 80 scientific papers and thirty popular articles.

John Allan's early descriptions of the geology of the Rocky Mountains (Allan, 1914) provided an understanding of the exploration near a known gas seep near present day Turner Valley (Figure 1, 2 and 3). In 1926, John Allan vigorously defended the viability of the Turner Valley Field against vicious attacks made by a California geologist. He chaired the First Annual Conference of the Alberta Society of Petroleum Geologists (ASPG) in Edmonton in March, 1929. Six papers of this conference were published in the AAPG Bulletin in 1931, volume 15.



Figure 1. John Allan was doing field work in the Foothills. He is shown here in the middle enjoying an after-dinner cigar (UAA 79-23-337).



Figure 2. John Allan and photographic equipment along the Sheep River in the summer of 1915 (UAA 77-84-14).

John Allan realized that a lot of gas was wasted in Turner Valley (Figure 4). He encouraged the increased use of natural gas, but warned that it could be disastrous to the development of Alberta's petroleum resources to have regulations compelling conservation of all gas (Research Council of Alberta, Annual Report, 1926). Alberta's Energy Resources Conservation Board (ERCB) was created in 1938.

In a talk on CKUA radio in 1927, John Allan predicted the oil boom which began in 1947 with the discovery of the Leduc oil field, partly based on the experience gained in the Turner Valley Field.

One of John Allan's graduate students (J.O.G. Sanderson) was instrumental in finding the oil leg on the west limb of the Turner Valley Anticline.



Figure 3. Looking north up Turner Valley along Range Road 30 about 1 km north of the town of Turner Valley (this dirt road is now Highway 22). Royalite No. 4 well can be seen at right in foreground. Gladys Allan and Ralph Rutherford, 1926. On October 17, 1924, this well had experienced a blow-out and a subsequent fire (UAA 79-23-4598).

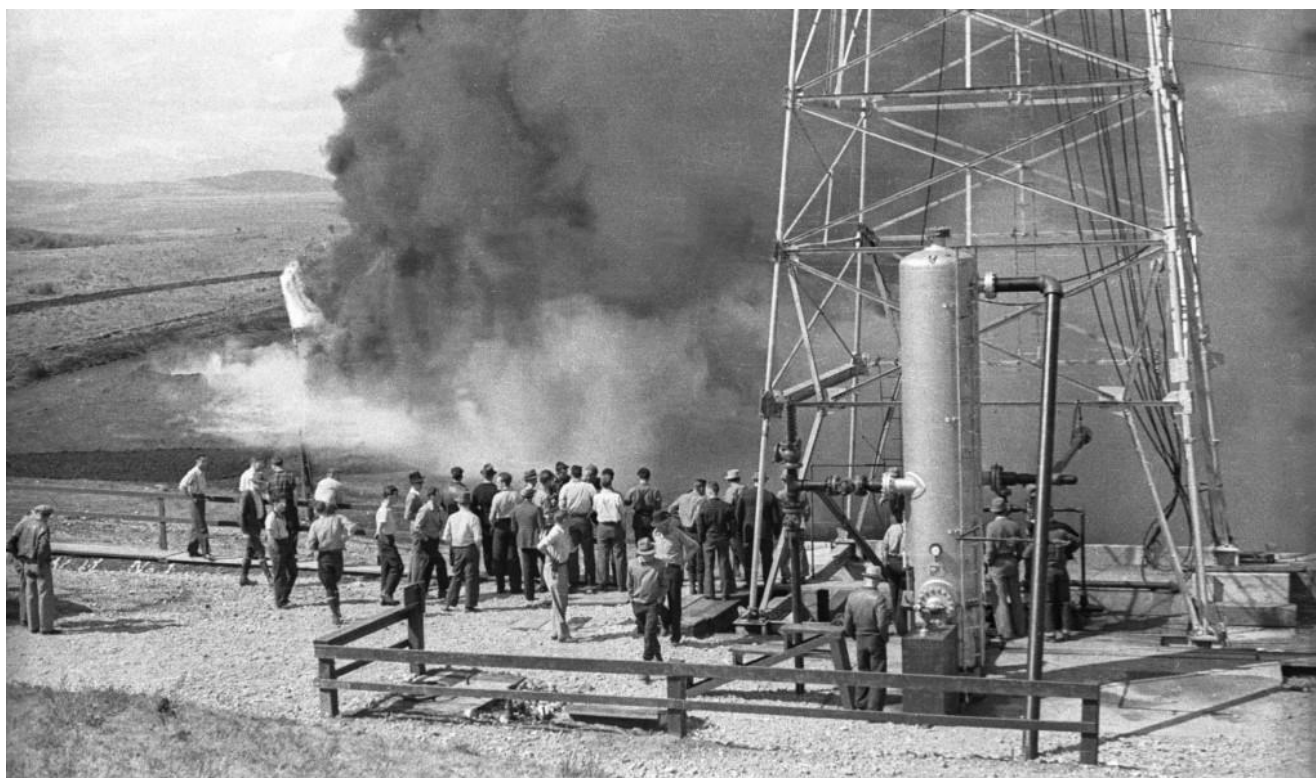


Figure 4. Gas burning near drill rig during U. of A. geology field-school to Turner Valley, 1939 (UAA 79-23-2135).

Conclusions

The appointment of John Allan as the first Professor of Geology at the University of Alberta in 1912 set the stage for the discovery of the Turner Valley Oil and Gas Field in 1914. John Allan's descriptions of Alberta's mineral resources form the foundation of the Turner Valley Oil and Gas Field as well as the energy industries now active in Alberta.

Acknowledgements

Dave Cruden, Charlie Schweger and Charlie Richmond are thanked for helping with the selection of the photographs.

References

Allan, J.A. (1914): Rocky Mountain Park, Alberta. Geological Survey of Canada, Summery Report, pages 100-102.

Langenberg and Cruden (in press): John Allan: The Founding of Alberta's Energy Industries. Edmonton Geological Society.

Warren, P.S. (1956): Memorial to John A. Allan (1884-1955). Proceedings Volume of the Geological Society of America, Annual Report for 1956, pp. 89-92.