



RESEARCH COUNCIL OF ALBERTA

Preliminary Report 62-7

RESEARCH COUNCIL OF ALBERTA
87th AVE. & 114th ST.
EDMONTON, ALBERTA

BIBLIOGRAPHY OF THE ATHABASCA OIL SANDS,
ALBERTA

Compiled

by

M. A. Carrigy

Research Council of Alberta
Edmonton, Alberta
1962

PREFACE

The number of requests received at the Research Council of Alberta for information about the Athabasca oil sands has indicated that a need exists for a compilation of all the literature references relevant to this vast, potentially economic reserve of petroleum. A bibliography of the oil sands of Alberta has been compiled over the past five years; its accuracy has been established by continual use in card index form and it is now felt that as a Preliminary Report it will fulfill a need of the oil industry and at the same time will permit revisions and additions to be incorporated in future editions.

This report has two parts; in Part I all the citations are listed alphabetically under the author's name with full title and publication data; in Part II the same publications are grouped under thirteen subject headings. Each of the thirteen sections of Part II is completely self-contained.

Doubtless some publications will have been overlooked, and in spite of careful checking some errors will be found in the references. The compiler will be grateful if errors and omissions are brought to his attention.

M. A. Carrigy.

Edmonton, Alberta, 1962.

CONTENTS

	Page
Preface	iii
Abbreviations used in publication citations	vii
Part I. Bibliography	1
Part II. Subject headings	29
1. History	29
2. Geology	30
3. Properties of oil sands	39
(a) Physical	39
(b) Chemical	40
4. Drilling	42
5. Mining	42
6. Recovery methods	43
7. Refining	55
8. Economics	58
9. Utilization	59
10. Patents	60
11. Reports of Royal Commissions and submissions to government agencies	63
12. Government regulations	64
13. News reports	64

ABBREVIATIONS USED IN PUBLICATION CITATIONS

Acad.	Academy
Agr.	Agriculture
Am.	America, American
Ann.	Annual
Assoc.	Association
Bull.	Bulletin
Can.	Canada
Chem.	Chemistry, chemical
Circ.	Circular
Co.	Company
Conf.	Conference
Congr.	Congress
Contrib.	Contribution
Coun.	Council
Dept.	Department
Div.	Division
Econ.	Economic
Ed.	Edition
Eng.	Engineer, engineers, engineering
Geochim.	Geochemical
Geog.	Geography, geographical
Geol.	Geology, geological, geologists
Govt.	Government

Ind. . . . .	. Industries, industrial
Inst. . . . .	. Institute
Investig. . . . .	. Investigation, investigations
Int. . . . .	. International
Jour. . . . .	. Journal
Lab. . . . .	. Laboratory
Ltd. . . . .	. Limited
Mag. . . . .	. Magazine
Mem. . . . .	. Memoir
Memo. . . . .	. Memorandum
Met. . . . .	. Metallurgy, metallurgist
Min. . . . .	. Mining
M. Sc. . . . .	. Master of Science degree
Natl. . . . .	. National
No. . . . .	. Number
Paleont. . . . .	. Paleontology
Pat. . . . .	. Patent
Proc. . . . .	. Proceedings
Prog. . . . .	. Progress
Pt. . . . .	. Part
Pub. . . . .	. Publication
Quart. . . . .	. Quarterly
Rept. . . . .	. Report
Res. . . . .	. Research
Rev. . . . .	. Review

- Roy. Royal
- Sci. Science
- Sec. Section
- Sed. Sedimentary
- Ser. Series
- Soc. Society
- Summ. Summary
- Surv. Survey
- Symp. Symposium
- Trans. Transactions
- Tech. Technology
- U. K. United Kingdom
- Univ. University
- U. S. United States of America
- U. S. S. R. Union of Soviet Socialist Republics
- Vol. Volume

PART I. BIBLIOGRAPHY

- Adkins, W. E. (1948): New plant to process Athabaska oil sands; *Petroleum Eng.*, April 1948, Vol. 19, No. 7, p. 121-126.
- _____ (1949a): Oil sands demonstration plant; *World Petroleum*, Vol. 20, p. 40-45.
- _____ (1949b): Report to the Board of Trustees on oil sands project from inception to December 1948; unpublished manuscript, Govt. Alberta, Edmonton.
- _____ (1950a): Report to the Board of Trustees on the Government oil sands project from January 1, 1949 to December 31, 1949; unpublished manuscript, Govt. Alberta, Edmonton.
- _____ (1950b): Novel separation process unlocking Canada's oil sands; *Chem. Eng.*, Vol. 57, No. 3, p. 103-105.
- Alcock, F. J. (1920): The origin of Lake Athabaska; *Geog. Rev.*, Vol. 10, No. 6, p. 400-407.
- Allan, J. A. (1920): The mineral resources of Alberta; *Res. Coun. Alberta Rept. 1*, p. 87-102.
- _____ (1924): Salt well No. 2 at Waterways; *Res. Coun. Alberta Rept. 10*, p. 48-53.
- _____ (1929): Salt and gypsum in Alberta; *Trans. Can. Inst. Min. Met.*, Vol. 32, p. 232-254.
- _____ (1938): Salt deposits at McMurray, Alberta; *Trans. Can. Inst. Min. Met.*, Vol. 40, p. 614-628.
- _____ (1943): Rock salt deposits at Waterways, Alberta; *Res. Coun. Alberta Rept. 34, Pt. 2*, p. 40-57.
- American Association of Petroleum Geologists (1951): Symposium on possible future petroleum provinces of North America; *Am. Assoc. Petroleum Geol.*, Tulsa, northern Alberta oil sands, p. 41-44.
- Anikin, P. I. (1957): Recovery of crude oil from tar sands; *U. S. S. R. Pat.* 108,518.
- Armstrong, H. H. (1926): Method of recovering hydrocarbon oils from oil sands and the like; *U. S. Pat.* 1,607,977.
- Badgley, P. C. (1952): Notes on the subsurface stratigraphy and oil and gas geology of the Lower Cretaceous series in central Alberta; *Geol. Surv. Can. Paper 52-11*, 12 pages.

- Ball, M. W. (1935): Athabaska oil sands: apparent example of local origin of oil; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 19, No. 2, p. 153-171.
- _____ (1941): Development of the Athabaska oil sands; *Trans. Can. Inst. Min. Met.*, Vol. 44, p. 58-91.
- Behning, P. D., Glass, E. D. and Rzasa, M. J. (1957): Oil recovery by underground combustion; U. S. Pat. 2,803,305.
- Bell, A. F. L. (1879): Apparatus for refining asphaltum; U. S. Pat. 581,457
- Bell, R. (1884): Report on part of the basin of the Athabaska River, Northwest Territory; *Geol. Surv. Can. Rept. Prog.*, 1882-83-84, Pt. CC, p. 5-35.
- _____ (1908a): The tar sands of the Athabasca River, Canada; *Trans. Am. Inst. Min. Eng.*, Vol. 38, p. 836-848.
- _____ (1908b): The tar sands of the Athabasca River, Canada; *Mining World*, Vol. 28, p. 753.
- _____ (1908c): The tar sands of the Athabasca River, Canada; *Am. Inst. Min. Met. Eng.*, Vol. B 20, p. 157-169.
- Belyea, H. R. (1952): Notes on the Devonian system of the north-central plains of Alberta; *Geol. Surv. Can. Paper 52-27*, 45 pages.
- Berg, C. H. (1951a): Mild hydrogenation of bitumen; *Oil in Canada*, Vol. 3 No. 51, p. 4491.
- _____ (1951b): Refining of high sulphur stocks by the cobalt molybdate process; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 271-288.
- _____ (1959): Tar sand distillation process and apparatus; U. S. Pat. 2,905,595.
- Bergstrom, E. V. (1959): Method and system for producing oil tenaciously held in porous formations using a dredging operation; U. S. Pat. 2,880,981.
- Blair, S. M. (1950): Report on the Alberta bituminous sands; Govt. Alberta, Edmonton, 82 pages.
- _____ (1952): Canada's oil industry; Neil Matheson McWharrie Lecture Royal School of Arts, London, April, 1952, 21 pages.
- Boomer, E. H. (1931): Natural gas research—hydrogenation; *Res. Coun. Alberta Rept.* 26, 1930, p. 66-74.

- Boomer, E. H. and Edwards, J. (1935): Hydrogenation in a tetralin medium. Destructive hydrogenation of bitumen and pitch; Can. Jour. Res., Vol. 13B, p. 323-330.
- Boomer, E. H. and Saddington, A. W. (1930): On the hydrogenation of bitumen from bituminous sands of Alberta; Can. Jour. Res., Vol. 2, p. 376-383.
- _____ (1931): On the hydrogenation of bitumen from the bituminous sands of Alberta; Can. Jour. Res., Vol. 4, p. 517-539.
- Booth, F. L., Carson, R. E., Bowles, K. W. and Montgomery, D. S. (1958): Low pressure hydrogenation of coker distillate from Athabasca bitumen; Can. Mines Branch Rept. R30, 92 pages.
- Bowles, K. W. and Booth, F. L. (1947): Study of the composition of the separated bitumen from Alberta bituminous sands; Can. Bureau Mines, Fuel Res. Lab., Rept. 76, 32 pages.
- Bowles, K. W. and Warren, T. E. (1948): Hydrogenation of Alberta bitumen; Can. Bureau Mines, Fuel Res. Lab. Rept. 96, 120 pages.
- Boyd, M. L. (1954): Bibliography of the Alberta bituminous sands; Can. Mines Branch Fuels Res. Rept. No. 1, 23 pages.
- Boyd, M. L. and Montgomery, D. S. (1961): A study of the Athabasca bitumen from Abasand Quarry, Alberta, Canada, Pt. I. Early history, analysis of the bituminous sand, and structural analysis of the asphaltene fraction, Pt. II. The initial chromatographic separation of the pentane extract and the structure and properties of the resinous components; Can. Mines Branch Res. Rept. R78 and R88, 67 pages and 94 pages respectively.
- Bredvold, L. M. (1951): Mass movement of material in open pit iron ore mines; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 108-120.
- Brooks, B. T. (1952): Evidence of catalytic action in petroleum formation; Ind. Eng. Chem., Vol. 44, p. 2570-2577.
- Bruce, W. A. (1957): Method of initiating combustion in an oil reservoir; U. S. Pat. 2,796,132.
- Bruce, W. R. and Hodgson, G. W. (1951): Flow characteristics of sand suspensions; Oil in Canada, Vol. 3, No. 51, p. 4490.

Bruce, W. R., Hodgson, G. W. and Clark, K. A. (1951): Flow characteristics of sand suspensions; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 237-247.

(1952): Hydraulic transportation of oil-sand tailings in small diameter pipes; Trans. Can. Inst. Min. Met., Vol. 55, p. 422-426.

Burwash, R. A. (1957): Reconnaissance of subsurface Precambrian of Alberta; Bull. Am. Assoc. Petroleum Geol., Vol. 41, No. 1, p. 70-103.

Camsell, C. and Malcolm, W. (1921): The MacKenzie River Basin; Geol. Surv. Can. Mem. 108, 151 pages.

Canadian Chemical Processing Industries (1952): Canadian firms tackle Alberta oil sands; Vol. 36, No. 4, p. 10-12.

(1952): How the economic "if" was taken out of the tar sands; Vol. 36, No. 4, p. 52-54.

Carpenter, P. G. (1959): Recovery of hydrocarbons from oil-bearing strata U. S. Pat. 2,880,802.

Carrigy, M. A. (1959a): Geology of the McMurray formation, Pt. III, General geology of the McMurray area; Res. Coun. Alberta Mem. 1, 130 pages.

(1959b): The significance of a grain size classification of the sands of the McMurray formation, Alberta; Proc. 5th World Petroleum Congr., Vol. 1, p. 575-590.

(1962): Effect of texture on the distribution of oil in the Athabasca oil sands, Alberta, Canada; Jour. Sed. Petrology, Vol. 32, No. 2, p. 312-325.

Carrigy, M. A. and Zamora, W. J. (1960): The Athabasca oil sands; Oil fields of Alberta, Alberta Soc. Petroleum Geol., Calgary, p. 38-49.

Carson, R. E. and Booth, F. L. (1952): Natural gas requirements for processing Alberta bituminous sands; unpublished manuscript, Can. Mines Branch, Fuel Res. Lab., 8 pages.

Champlin, J. B. and Dunning, H. N. (1960): A geochemical investigation of the Athabasca bituminous sands; Econ. Geol., Vol. 55, p. 797-804.

- Chandrasekaran, K. and Weingaertner, E. (1956): Application of the phase - exchange method to demineralization of Athabasca tar sands; Jour. Indian Inst. Sci., Vol. 38A, p. 169-176.
- Clapp, F. G. and Huntley, L. G. (1913): Petroleum and natural gas resources of Canada; Can. Mines Branch Summ. Rept. 1912, Rept. No. 224, p. 48-57.
- Clark, K. A. (1921): The McMurray tar sands; Can. Min. Jour., Vol. 42, No. 48, p. 943-944.
- _____ (1922): The bituminous sand and its commercial development; Res. Coun. Alberta Rept. 5, Ann. Rept. 1921, p. 43-59.
- _____ (1923): The bituminous sands of northern Alberta. Their separation and their utilization in road construction; Res. Coun. Alberta Rept. 8, Ann. Rept. 1922, p. 42-58.
- _____ (1924): Bituminous sands of northern Alberta; Res. Coun. Alberta Rept. 10, Ann. Rept. 1923, p. 59-72.
- _____ (1928a): The availability of the Alberta bituminous sands for production of fuel oil; Trans. Fuel Conf., World Power Conf., London, 1928, Vol. 1, p. 581-584.
- _____ (1928b): Bituminous treatment of gravel roads; Res. Coun. Alberta Rept. 22, Ann. Rept. 1927, p. 42-48.
- _____ (1929a): Bituminous sands of Alberta; Pt. III, Utilization; Res. Coun. Alberta Rept. 18, 33 pages.
- _____ (1929b): Asphalt emulsion and gravel road treatment; Res. Coun. Alberta Rept. 24, Ann. Rept. 1928, p. 39-48.
- _____ (1930): The separation of the bitumen from Alberta bituminous sands; Can. Min. Met. Bull., No. 212, p. 1385-1395.
- _____ (1931): Separation of bitumen from bituminous sands; Nature, Vol. 127, p. 199.
- _____ (1935): Recovery of oil from bituminous sands in northern Alberta; Natl. Petroleum News, Vol. 27, No. 27, p. 30, 32-36.
- _____ (1944a): Hot-water separation of Alberta bituminous sand; Trans. Can. Inst. Min. Met., Vol. 47, p. 257-274.
- _____ (1944b): Some physical properties of a sample of Alberta bituminous sand; Can. Jour. Res., Vol. 22F., p. 174-180.

- _____ (1945a): Asphaltic road oils from Alberta bituminous sand; *Can. Chem. Processing Ind.*, Vol. 29, p. 616-617.
- _____ (1945b): Bituminous sands of Alberta; *Oil Weekly*, Vol. 118, No. 11, p. 46-51.
- _____ (1948a): The oil-sand separation plant at Bitumount; *Western Miner*, Vol. 21, No. 8, p. 131-134.
- _____ (1948b): Extracting oil from bituminous sands; *Can. Pat.* 448,
- _____ (1949): The Athabasca tar sands; *Scientific Am.*, Vol. 181, No. 5, p. 52-55.
- _____ (1950): The hot water washing method for the recovery of oil from Alberta tar sands; *Can. Oil and Gas Ind.*, Vol. 3, No. 1, p. 46-49.
- _____ (1951a): Guide to the Alberta oil-sands area along the Athabasca River between McMurray and Bitumount and to the oil-sand separation plant of the Alberta Government; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 343-366.
- _____ (1951b): New technique taps Athabasca tar sands; *World Oil*, Vol. 132, No. 2, p. 205-208.
- _____ (1951c): Commercial development feasible for Alberta's bituminous sands; *Can. Oil and Gas Ind.*, Vol. 4, No. 10, p. 25-27.
- _____ (1951d): Athabasca bituminous sands; *Fuel*, Vol. 30, p. 49-51.
- _____ (1955): Athabasca oil sands; Part of Govt. Alberta brief for Gordon Royal Commission.
- _____ (1957a): The Athabasca oil sands; *Edmonton Geol. Soc. Quarterly*, Vol. 1, No. 1, p. 3.
- _____ (1957b): The Athabasca oil sands; unpublished manuscript, Res. Coun. Alberta, Edmonton.
- _____ (1957c): Bulk densities, porosities and liquid saturations of good grade Athabasca oil sands; *Res. Coun. Alberta Mimeo. Circ.* 22, 22 pages.
- _____ (1959a): Permeabilities of the Athabasca oil sands; *Trans. Can. Inst. Min. Met.*, Vol. 63, p. 151-156.
- _____ (1959b): Monthly analyses of Athabasca River water, sampled and near McMurray, Alberta; *Res. Coun. Alberta Mimeo. Circ.* 28, 2 pages.

- Clark, K. A. and Alexander, E. L. (1951): Some laboratory results related to mining oil sands by block caving; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 158-161.
- Clark, K. A. and Blair, S. M. (1925): The bituminous sands of northern Alberta; Res. Coun. Alberta Rept. 12, Ann. Rept. 1924, p. 46-65.
- _____ (1926): Bituminous sand separation; Earth road treatments; Res. Coun. Alberta Rept. 16, Ann. Rept. 1925, p. 47-61.
- _____ (1927a): Bituminous sand separation; cracking tests on McMurray bitumen and on Wainwright crude oil. Bituminous sands, rock asphalts and road oiling in the United States; Res. Coun. Alberta Rept. 20, Ann. Rept. 1926, p. 39-50.
- _____ (1927b): The bituminous sands of Alberta, Pt. I, Occurrence, Pt. II, Separation; Res. Coun. Alberta Rept. 18, 74 and 26 pages respectively.
- Clark, K. A. and Donvito, S. (1943): Asphaltic road oils from Abasand diluted crude; unpublished manuscript, Res. Coun. Alberta, Edmonton, 22 pages.
- Clark, K. A. and Pasternack, D. S. (1930): Separation plant at Dunvegan yards; Separation plant at Waterways; Laboratory studies; Res. Coun. Alberta Rept. 25, Ann. Rept. 1929, p. 48-60.
- _____ (1931a): Operation of the separation plant on the Clearwater River, Waterways; Res. Coun. Alberta Rept. 26, Ann. Rept. 1930, p. 41-62.
- _____ (1931b): Developing the use of bituminous sands; Contractors Record Eng. Rev., Vol. 45, p. 1270-1273, 1489-1492.
- _____ (1932): Hot water separation of bitumen from Alberta bituminous sand; Ind. Eng. Chem., Vol. 24, p. 1410-1416.
- _____ (1947): Elimination of water from wet crude oil obtained from bituminous sand by the hot water washing process, Pt. I, Continuous settling at atmospheric pressure; Can. Chem. Processing Ind., Vol. 31, p. 1007-1011.
- _____ (1948): Elimination of water from wet crude oil obtained from bituminous sand by the hot water washing process, Pt. II, Continuous settling under pressure; evaporation; Can. Chem. Processing Ind., Vol. 32, p. 32-36.

- _____ (1949): The role of very fine mineral matter in the hot water separation process as applied to Athabasca bituminous sand; Res. Coun. Alberta Rept. 53, 22 pages.
- Clark, K. A. and Shea, G. B. (1954): Tar sands; Encyclopedia of Chemical Technology, Vol. 13, p. 633-645.
- Clarke, N. S. (1926): Process for the separation of oil from oil sands and other like material; U. S. Pat. 1,592,179.
- Corbett, G. S. (1955): In situ origin of McMurray oil of northeastern Alberta and its relevance to general problem of origin of oil; Bull. Am. Assoc. Petroleum Geol., Vol. 39, No. 8, p. 1601-1649.
- Coulson, G. R. (1953): Process for separating oil from bituminous sand shale etc.; Can. Pat. 491,955.
- _____ (1956): Process for separating oil from bituminous sands, shales etc.; Can. Pat. 529,888.
- _____ (1958): Separation of oil from bituminous sands, shales, etc.; U. S. Pat. 2,825,677.
- _____ (1959): Extraction of oil from shales and like oil bearing material; U. S. Pat. 2,911,349.
- Crawford, P. B. (1955): Recovery by combustion of petroleum oil from partially depleted subterranean reservoirs; U. S. Pat. 2,722,200.
- _____ (1957): Oil recovery from partially depleted reservoirs; U. S. Pat. 2,804,146.
- Crickmay, C. H. (1954): Paleontological correlation of Elk Point and equivalents; in Ralph Leslie Rutherford Memorial Volume, Western Canada Sedimentary Basin Symposium, Am. Assoc. Petroleum Geol., Tulsa, p. 143-148.
- _____ (1957): Elucidation of some western Canada Devonian formations; published by the author, Imperial Oil Ltd., Calgary, 15 pages.
- Davis, C. M. (1951a): Electrovolatilization of oil in situ; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 141-152.
- _____ (1951b): Athabasca oil, in situ recovery by electrovolatilization; Can. Oil and Gas Ind., Vol. 3, No. 11, p. 54-55.
- Dawson, G. M. (1897): Boring at Athabasca Landing; Geol. Surv. Can. Rept. 1895, Vol. 8, Pt. A, p. 8-16.

- _____ (1898): Boring at Athabasca Landing; Geol. Surv. Can. Ann. Rept. 1896, Vol. 9, Pt. A, p. 13-18.
- _____ (1899): Experimental borings in northern Alberta; Geol. Surv. Can. Ann. Rept. 1897, Vol. 10, Pt. A, p. 18-27.
- _____ (1901): Experimental borings in northern Alberta and Athabasca; Geol. Surv. Can. Ann. Rept. 1898, Vol. 11, Pt. A, p. 28-34.
- _____ (1902): Experimental borings in northern Alberta; Geol. Surv. Can. Ann. Rept. Vol. 12, Pt. A, Summ. Rept. 1899, p. 11-15.
- Djingheuzian, L. E. (1950a): The cold-water method applied to separation of oil from Alberta bituminous sands; Can. Oil and Gas Ind., Vol. 3, No. 2, p. 32-34.
- _____ (1950b): Pilot plant investigation on cold water separation of bitumen from Alberta tar sands; unpublished manuscript, Can. Mines Branch Rept. MD 70, 85 pages.
- _____ (1951a): Cold-water method of separation of bitumen from Alberta bituminous sand; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 185-199.
- _____ (1951b): Cold-water separation; Oil in Canada, Vol. 3, No. 51, p. 4486-4487.
- _____ (1952a): Cold water separation process; Trans. Can. Inst. Min. Met., Vol. 55, p. 1-14.
- _____ (1952b): Preliminary notes on tailing disposal at a plant treating 20,000 to 100,000 cubic yards of Alberta bituminous sand per day; Can. Mines Branch, Fuels Div., Mimeo. Rept.
- _____ (1953): Tailing disposal problems of Alberta tar sands; Can. Min. Jour., Vol. 74, No. 5, p. 69-75.
- Djingheuzian, L. E. and Warren, T. E. (1951): A study of cold-water separation of bitumen from Alberta bituminous sand on a pilot-plant scale; Can. Jour. Tech., Vol. 26, p. 170-189.
- Dolbear, S. H. (1924): Method of concentrating oil shales; U. S. Pat. 1,510,983.
- Doscher, T. M. and Reisberg, J. (1959): Recovery of oil from tar sands; U. S. Pat. 2,882,973.

- Dyck, W. J. (1944): Rapid laboratory and field method for the determination of bitumen content of bituminous sands; Can. Bureau Mines, Memo. Ser., No. 87, 9 pages.
- Egloff, G. and Morrell, J. C. (1926): The cracking of bitumen from Canadian Alberta tar sands; Trans. Am. Inst. Chem. Eng., Vol. 18, p. 347-363.
- _____ (1927a): Cracking of bitumen from tar sand; Oil and Gas Jour., Vol. 25, No. 32, p. 192.
- _____ (1927b): Cracking of bitumen derived from Alberta tar sands; Can. Chem. Met., Vol. 11, p. 33.
- Elkins, L. E. (1956): Oil production from bituminous sands; U. S. Pat. 2,734,579.
- Ellison, A. H. (1957): Some operational notes for the McMurray area; J. Alberta Soc. Petroleum Geol., Vol. 5, No. 5, p. 107-108.
- _____ (1959): Evidence of supersaturated zones in the Athabasca oil sands; Jour. Alberta Soc. Petroleum Geol., Vol. 7, No. 8, p. 177-178.
- Ells, S. C. (1914a): Summary report on bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1913, Rept. 285, p. 54-62.
- _____ (1914b): Preliminary report on the bituminous sands of northern Alberta; Can. Mines Branch Rept. 281, 88 pages.
- _____ (1915a): Notes on clay deposits near McMurray Alberta; Can. Mines Branch Bull. 10, 15 pages.
- _____ (1915b): Bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1914, Rept. 346, p. 60-73.
- _____ (1916a): Investigation of bituminous sands of northern Alberta; Can. Min. Jour., Vol. 37, p. 73-74.
- _____ (1916b): Investigations of bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1915, Rept. 421, p. 67-76.
- _____ (1917a): Bituminous sands of northern Alberta; Trans. Can. Min. Met., Vol. 20, p. 447-459.
- _____ (1917b): Investigation of bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1916, Rept. 454, p. 56-58.
- _____ (1919): The bituminous sands of northern Alberta; Geol. Mag. New Ser., Vol. 6, p. 142.

_____ (1922): Bituminous sands of Alberta; Can. Mines Branch Summ. Rept. 1920, Rept. 574, p. 19-22.

_____ (1924a): Bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1922, Rept. 605, p. 44-46.

_____ (1924b): Extent and characteristics of northern Alberta bituminous sands; Natl. Petroleum News, Vol. 16, No. 15, p. 69-73.

_____ (1924c): Bituminous sands and their use for road surfacing material; Natl. Petroleum News, Vol. 16, No. 17, p. 75-80, 82.

_____ (1924d): Bituminous sands of northern Alberta; Can. Mines Branch Rept. 625, 35 pages.

_____ (1924e): Mineral resources and the mining industry, 1923, III, Bituminous sands of northern Alberta; Can. Mines Branch Rept. 616, p. 4-11.

_____ (1924f): Bituminous sands of Alberta; Can. Min. Jour., Vol. 45, p. 298-304 and 400-403.

_____ (1924g): The bituminous sands of northern Alberta; Can. Min. Jour., Vol. 10, p. 358-359, p. 710-717.

_____ (1924h): Bituminous sands of northern Alberta; Petroleum World, Vol. 21, p. 152.

_____ (1926): Bituminous sands of northern Alberta; Occurrence and economic possibilities; Report on investigations to the end of 1924; Can. Mines Branch Rept. 632, 239 pages.

_____ (1927): Use of Alberta bituminous sands for surfacing highways; Can. Mines Branch Rept. 684, 31 pages.

_____ (1928a): Bituminous sands of northern Alberta; Trans. Can. Inst. Min. Met., Vol. 30, p. 646-670. Also 2nd Triennial Empire Min. Met. Congr. Canada 1927, Proc. Pt. 3, p. 130-154.

_____ (1928b): Investigation of mineral resources and the mining industry, 1927, Pt. I, Bituminous sands of northern Alberta ... experimental drilling and paving operations, 1927; Can. Mines Branch Rept. No. 694, 45 pages.

_____ (1929): Core drilling bituminous sands of northern Alberta; Can. Mines Branch Rept. 710, 26 pages.

_____ (1930): Bituminous sands of northern Alberta ... operations during 1929; Can. Mines Branch Rept. 719, p. 28-42.

- _____ (1931a): Bituminous sands of northern Alberta ... operations during 1930; Can. Mines Branch Rept. 723, p. 1-11.
- _____ (1931b): Fossil wood discovered in Alberta bituminous sands; Can. Min. Jour., Vol. 52, No. 7, p. 171-172.
- _____ (1932a): Recent progress in the commercial separation of bitumen from bituminous sand; Can. Mines Branch Rept. 727, p. 135-139.
- _____ (1932b): Estimated cost of producing solid and liquid hydrocarbons from bituminous sand; Can. Mines Branch Rept. 727, p. 140-145.
- _____ (1932c): Exploration of bituminous sand areas in northern Alberta; Can. Mines Branch Rept. 727, p. 107-134.
- _____ (1934): Some economic aspects of the bituminous sands of northern Alberta; Can. Mines Branch Rept. 735, p. 10-29.
- _____ (1936): Bituminous sands in northern Alberta; Min. Mag., Vol. 54, p. 329-341.
- _____ (1942): Research touches the north; Can. Geog. Jour., p. 267.
- Ells, S. C. and Swinnerton, A. A. (1937): Bituminous sands of Alberta; Trans. Can. Inst. Min. Met., Vol. 40, p. 629-648.
- Eyre, R. T. (1957): Recovery of oil from bituminous sands; U. S. Pat. 2,790,750.
- Falconer, W. L. (1951a): Stratigraphy of McMurray formation; Oil in Canada, Vol. 3, No. 50, p. 4440-4443.
- _____ (1951b): Stratigraphy of McMurray formation; Proc. Athaba Oil Sands Conf., Govt. Alberta, Edmonton, p. 26-29.
- Fawcett, T. (1889): Exploratory survey of Athabasca and Churchill River Rept. Dept. Interior Can., 1888, p. 72-82.
- Ferguson, J. C. and Adkins, W. E. (1952): Apparatus for the recovery of tar sands; Can. Pat. 488,928.
- Fischer, P. W., Kenny, V. and Scheffel, J. W. (1959): Recovery of hydrocarbons from tar sand; U. S. Pat. 2,903,407.
- Fitzsimmons, R. C. (1953): Process for recovering bitumen from tar sand; Can. Pat. 493,081.

- Franklin, John (1828): Narrative of a second expedition to the shores of the polar sea in the years 1825, 1826 and 1827, including an account of the progress of a detachment to the eastward by John Richardson; John Murray, London, 477 pages.
- Fraser, A. W. (1895): Report on boring at Athabasca Landing, Alberta; Geol. Surv. Can., Ann. Rept. Vol. 7, Pt. A, Summ. Rept. 1894, p. 6-14.
- Fyleman, M. E. (1921): A process for separating mineral oils or the like from sand or rock; U. K. Pat. 163,519.
- _____ (1922): Separation of adherent oil or bitumen from rock; Jour. Soc. Chem. Ind., Vol. 41, p. 14T-16T.
- _____ (1927): Process for separating mineral oils or the like from sand or rock; U. S. Pat. 1,615,121.
- Gallup, W. B. (1960): Current exploratory techniques in the Athabasca bituminous sands area; Trans. Can. Inst. Min. Met., Vol. 63, p. 157-161.
- Garland, G. D. and Bower, M. E. (1959): Interpretation of aeromagnetic anomalies in northeastern Alberta; Proc. 5th World Petroleum Congr., Vol. 1, p. 787-800.
- Garrison, A. D. and Kunetka, R. E. (1959): In situ combustion; U. S. Pat. 2,871,942.
- Gibbon, A. (1957): Is this the answer to the Athabasca tar sand riddle?; World Oil, Dec. 1957, p. 171-177.
- Gilmore, R. E., Rosewarne, P. V. and Swinnerton, A. A. (1926): Canadian shale oil and bitumen from bituminous sands as sources of gasoline and fuel by pressure cracking; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689, p. 121-132.
- Gilmore, R. E., Swinnerton, A. A. and Connell, G. P. (1929): The assay of bituminous sands; Can. Mines Branch, Investig. Fuels and Fuel Testing, Rept. 696, p. 83-103.
- Gishler, P. E. (1949): The fluidization technique applied to direct distillation of oil from bituminous sand; Can. Jour. Res., Vol. 27F, p. 104-111.
- Gishler, P. E. and Peterson, W. S. (1949): The fluidized solids technique applied to the production of oil from Alberta bituminous sand; Can. Oil and Gas Ind., Vol. 3, No. 1, p. 26-30.

- _____ (1958): Treatment of bituminous sands
Can. Pat. 530,920.
- Glinka, C. (1959): Method of extraction of oil from oil-containing mine
U. S. Pat. 2,881,126.
- Goodman, A. J. (1935): Notes on the petroleum geology of Western Canada
Inst. Petroleum Tech., Vol. 21, p. 221-273.
- Gordon, A. G. (1932): The anatomical structure of Mesozoic plants from
the bituminous sands of the McMurray formation; unpublished
M. Sc. thesis, Univ. of Alberta, Edmonton.
- Government of Alberta (1950): Engineering and economic data from operation
of Bitumount plant - summer 1949; unpublished manuscript, C
Sands Project, Govt. Alberta, Edmonton.
- _____ (1958): Regulations governing disposition of bituminous
sands rights the property of the Crown under The Mines
and Minerals Act; Department of Mines and Minerals office
consolidation of Alberta regulation 333/57 and 195/58.
- _____ (1959): Alberta Technical Committee report to
the Minister of Mines and Minerals and the Conservation Board
with respect to an experiment proposed by Richfield Oil
Corporation involving an underground nuclear explosion
beneath the McMurray oil sands with the objective of
determining the feasibility of recovering the oil with the aid
of the heat released from such an explosion; 55 pages.
- _____ (1960): Report to the Lieutenant Governor in
Council with respect to the application of Great Canadian
Oil Sands Limited under part VI A of the Oil and Gas Conservation
Act; 81 pages.
- _____ (1961a): Regulations to amend the regulations
governing the disposition of bituminous sands rights the property
of the Crown; Alberta Regulation 12/61.
- _____ (1961b): Regulations governing the disposition of
oil sands rights the property of the Crown; Alberta Regulation
144/61.
- Government of Canada (1949): Drilling and sampling of bituminous sands
of northern Alberta, Results of Investigations 1942-1947; 3
volumes, Can. Mines Branch, Rept. 826.
- Greiner, H. R. (1956): Methyl dolomite of northeastern Alberta; Middle
Devonian reef formation; Bull. Am. Assoc. Petroleum Geol.,
Vol. 40, No. 9, p. 2057-2080.

- Gussow, W. C. (1955): Time and migration of oil and gas; Bull. Am. Assoc. Petroleum Geol., Vol. 39, No. 5, p. 547-574.
- _____ (1956): Athabasca bituminous sands; 20th Int. Geol. Congr., Mexico, Vol. 3, p. 68-70.
- Haanel, B. F. and Gilmore, R. E. (1933): Experiments on the hydrogenation of Alberta bitumen and on the effects of pressure on the pyrolysis of methane; Can. Mines Branch Rept. 725, p. 112-114.
- Haensel, V. (1956): Separating and cracking of oil from oil-bearing sands; U. S. Pat. 2,733,193.
- Haliburton, J. (1947): Liquid diffusion in porous media, with specific reference to the Athabasca tar sands; unpublished M. Sc. thesis, Univ. of British Columbia, Vancouver, 19 pages.
- Hall, H. H. (1951a): Pipeline transport from oil sands; Oil in Canada, Vol. 3, No. 50, p. 4460-4461.
- _____ (1951b): Pipelines from the bituminous sands of Alberta; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 330-333.
- Hall, P. B. (1951a): Coring bituminous sands; Oil in Canada, Vol. 3, No. 50, p. 4454.
- _____ (1951b): Coring of the bituminous sands in the Fort McMurray district of Alberta; Proc. Athabasca Oil Sands Conf. Govt. Alberta, Edmonton, p. 101-107.
- Hardel, J. A. (1924): Les gris bitumineux de Madagascar; Chemie et Industrie, Vol. 11, p. 31-44.
- Heilman, W. O. and Ogorzaly, H. J. (1953): Underground retorting for secondary oil recovery; U. S. Pat. 2,718,263.
- Hemminger, C. E. (1960): Water washing of tar sands; U. S. Pat. 2,940,919.
- Hill, T. W. (1952): Electro-thermal recovery of petroleum; Producers Monthly, Vol. 16, No. 11, p. 14-20.
- Hitzman, D. O. (1959): Recovery of petroleum from oil sands and the like; U. S. Pat. 2,907,389.
- Hodgson, G. W. (1954a): The McMurray oil field; Alberta Soc. Petroleum Geol., News Bull., Vol. 2, No. 3, p. 1-3.

- _____ (1954b): Vanadium, nickel and iron trace metals in crude oils of Western Canada; *Bull. Am. Assoc. Petroleum Geol.*, Vol. No. 12, p. 2537-2554.
- _____ (1959): Tar sands; *Petroleum Refiner*, Vol. 38, No. 1, p. 19.
- Hodgson, G. W., Peterson, W. S. and Gishler, P. E. (1951): The flash distillation of wet bituminous sand oil in a fluidized solids still unpublished manuscript, *Natl. Res. Coun.*, Ottawa.
- Hodgson, G. W., Matchen, B., Peterson, W. S. and Gishler, P. E. (1951): Oil from Alberta bitumen. Simultaneous dehydration and coking using fluidized solids; *Ind. Eng. Chem.*, Vol. 44, p. 1492-1494.
- Hoffman, G. C. (1883): Chemical contributions to the geology of Canada from the laboratory of the survey; *Geol. Surv. Can. Rept. Proc.* 1880-1882, p. 3H.
- Hopper, D. A. (1945): A liquid diffusion in porous media referring in particular to the Athabasca tar sands; unpublished M. Sc. thesis, *Univ. of British Columbia*, Vancouver.
- Hubbard, R. L. and Stanfield, K. E. (1949): Laboratory study of asphalt from bitumens and bituminous sandstone; *U. S. Bureau of Mines Rept. Investig.*, No. 4523, 22 pages.
- Hume, G. W. (1924): Clay deposits on Athabasca River, Alberta; *Geol. Surv. Can. Summ. Rept.* 1923, Pt. B, p. 16-20.
- _____ (1933): Oil and gas in Western Canada; *Geol. Surv. Can. Econ. Geol. Ser.* No. 5, 2nd Ed., p. 229-237.
- _____ (1944): Petroleum geology of Canada; *Geol. Surv. Can. Econ. Geol. Ser.*, No. 14, p. 30-34.
- _____ (1947a): Results and significance of drilling operations in the Athabasca bituminous sands; *Trans. Can. Inst. Min. Met.*, Vol. 50, p. 298-333.
- _____ (1947b): The interior plains, in geology and economic minerals of Canada; *Geol. Surv. Can. Econ. Geol. Ser.*, No. 1, 3rd Ed., p. 189-219.
- _____ (1951a): Possible Lower Cretaceous origin of bitumen in bituminous sands of Alberta; *Proc. Athabasca Oil Sands Conf.*, *Govt. Alberta*, Edmonton, p. 66-75.
- _____ (1951b): Possible Lower Cretaceous origin; *Oil in Canada*, Vol. 3, No. 50, p. 4450.

- _____ (1951c): Outline of drilling program; Oil in Canada, Vol. 3, No. 50, p. 4452.
- _____ (1951d): Drilling and sampling bituminous sand deposits; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 98-100.
- Huntley, L. G. (1915): Oil, gas and water content of Dakota sand in Canada and United States; Trans. Am. Inst. Min. Met. Eng., Vol. 52, p. 329-352.
- Isbister, A. K. (1855): On the geology of the Hudson's Bay Territories, and portions of the Arctic and North-western Regions of North America; Quart. Jour. Geol. Soc. London, Vol. 11, p. 497-520.
- Katz, M. (1934): Alberta bitumen. 1. The composition of blown Alberta bitumen; Can. Jour. Res., Vol. 10, p. 435-451.
- Kidd, F. A. (1951): Geology of the bituminous sand deposits of the McMurray area Alberta; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 30-38.
- Koch, R. L. (1957): Initiation of combustion in a subterranean petroleum reservoir; U. S. Pat. 2,818,117.
- Koch, R. L., Gleason, J. F. and Boston, W. G. (1954): In situ combustion field tested again; Oil and Gas Jour., Feb., p. 102.
- Krieble, V. K. and Seyer, W. F. (1921): A chemical investigation of the asphalt in the tar sands of northern Alberta; Jour. Am. Chem. Soc., Vol. 43, Pt. 1, p. 1337-1349.
- Kuhn, C. S. and Koch, R. L. (1953): In-situ combustion; newest method of increasing oil recovery; Oil and Gas Jour., Aug., p. 92-96, 113-114.
- Kupsch, W. O. (1954): Bituminous sands in till of Peter Pond Lake area, Saskatchewan; Govt. Saskatchewan, Dept. Mineral Resources, Geol. Surv. Rept. 12, 35 pages.
- Langford, C. T. and Teplitz, A. J. (1931): Method for separating bitumen from bituminous sands and similar bituminous materials; U. S. Pat. 1,820,917.
- Latham, R. H. (1951a): Proposed mining methods; Oil in Canada, Vol. 3, No. 50, p. 4456-4457.
- _____ (1951b): Proposed methods of mining Alberta oil sands; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 121-130.

- Lilge, E. O. (1945): Purification of silica sand ... Alberta tar sands suitable for glass manufacturing; *Can. Chem. Processing Ind.*, Vol. 29, p. 480-482.
- Link, T. A. (1931): The Alberta syncline; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 15, No. 5, p. 491-507.
- (1951a): Source of oil in oil sands of Athabasca River, Alberta, Canada; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 55-65.
- (1951b): Possible Devonian origin of bitumen; *Oil in Canada*, Vol. 3, No. 50, p. 4448.
- (1951c): Source of oil in "Tar Sands" of the Athabasca River, Alberta, Canada; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 31, No. 4, p. 854-864.
- Lipson, J. (1958): Potassium-argon dating of sedimentary rocks; *Bull. Geol. Soc. Am.*, Vol. 69, p. 137-150.
- Ljungström, F. (1956a): Verfahren zum Gewinnen von Öl und Gas aus unkonsolidierten, bitumenosen, geologischen Vorkommen; German Pat. 954,721, Class 26, Group 9.
- (1956b): Recovery of oil from shale in situ by electric heating; U. S. Pat. 2,732,195.
- (1957): Recovery of oil and gases from non-consolidated bituminous geological formations by heating treatment in situ; U. S. Pat. 2,780,450.
- Logan, H. A. (1951): Discussion of blasting; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 131-134.
- McClave, J. M. (1926): Process for the separation of hydrocarbons from earthy matter; U. S. Pat. 1,594,625.
- (1936): The recovery of oil from Athabasca Oil Sands; *Can. Min. Jour.*, Vol. 56, Dec. 1936, p. 317-323.
- McConnell, R. G. (1891): Tar sands on Athabasca River; *Geol. Surv. Can. Ann. Rept.* 5, Part S, p. 144-147.
- (1893a): Report on a portion of the district of Athabasca, comprising the country between Peace River and Athabasca River north of Lesser Slave Lake; *Geol. Surv. Can. Ann. Rept.* 1891, Vol. 5, Pt. D, p. 5-67.

- _____ (1893b): Summary report on the Athabasca region, Alberta; Geol. Surv. Can. Ann. Rept., Vol. 5, Pt. A, Summ. Rept. 1890, p. 21-26A.
- MacDonald, W. D. (1947): A comparative study of the Waterways and older formations of the McMurray area; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- _____ (1955): The Waterways formation in the subsurface at McMurray, Alberta; Jour. Alberta Soc. Petroleum Geol., Vol. 3, No. 7, p. 105-107.
- McGehee, J. R. (1949): Pre-Waterways Paleozoic stratigraphy of Alberta plains; Bull. Am. Assoc. Petroleum Geol., Vol. 33, No. 4, p. 603-613.
- MacKenzie, A. (): Voyages from Montreal through the continent of North America to the frozen and Pacific oceans in 1789 and 1793; 2 Vols., published in 1911 by Courier Press, Toronto, 355 and 360 pages.
- McLearn, F. H. (1917): Athabasca River section, Alberta; Geol. Surv. Can. Summ. Rept. 1916, p. 145-151.
- _____ (1918): Peace River Section, Alberta; Geol. Surv. Can. Summ. Rept. 1917, Pt. C, p. 14-21.
- _____ (1932): Problems of the Lower Cretaceous of the Canadian interior; Trans. Roy. Soc. Can., Ser. 3, Vol. 26, Sec. 4, p. 157-175.
- _____ (1933): Pelecypods of the Lower Cretaceous Clearwater formation, Northern Alberta; Trans. Roy. Soc. Can., Ser. 3, Vol. 27, Sec. 4, p. 139-156.
- _____ (1945): Revision of the Lower Cretaceous of the western interior of Canada; Geol. Surv. Can. Paper 44-17, 2nd Ed., 14 pages.
- McMurray Asphaltum and Oil Limited (1924): Bituminous sand research by McMurray Asphaltum Oil Limited and Draper Manufacturing Company; Can. Min. Jour., Vol. 45, p. 1270-1271.
- McNab, J. G., Smith, P. V. and Betts, R. L. (1952): The evolution of petroleum; Ind. Eng. Chem., Vol. 44, Pt. 3, p. 2556-2563.
- McNicholas, F. S. (1951a): Block caving of oil sands; Oil in Canada, Vol. 3, No. 50, p. 4458.

- _____ (1951b): Block caving; Proc. Athabasca Oil Sands Conf., Govt. of Alberta, Edmonton, p. 136-140.
- Macoun, J. (1877): Geological and topographical notes on the lower Peace and Athabaska Rivers; Geol. Surv. Can. Rept. Prog. 1875-1877, p. 87-95.
- Malcolm, W. (1913): Oil and gas prospects of the Northwest Provinces of Canada; Geol. Surv. Can. Mem. 29-E, 98 pages.
- Martin, L. J. (1954): Clearwater shale foraminifera, Athabasca River, Alberta; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- Marx, J. W. and Tek, M. R. (1958): Oil recovery by in-situ combustion; U. S. Pat. 2,853,137.
- Matchen, B. and Gishler, P. E. (1951): A study of the oil produced by flash distillation of bituminous sand in a fluidized bed; unpublished manuscript No. C51-51S, Natl. Res. Coun., Ottawa.
- Meek, F. B. (1868): Remarks on the geology of the valley of the Mackenzie River, with figures and descriptions of the fossils from that region in the Museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott Esq.; Trans. Chicago Acad. Sci. Vol. 1, p. 61-114.
- Mellon, G. B. (1955): Age and origin of the McMurray formation; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- Mellon, G. B. and Wall, J. H. (1956): Geology of the McMurray formation, Pt. I, Foraminifera of the upper McMurray and basal Clearwater formations, Pt. II, Heavy minerals of the McMurray formation; Res. Coun. Alberta Rept. 72, 43 pages.
- Mjolsness, W. E. and Stewart, J. H. (1952): A proposed low-cost method for oil sands extraction; Northwest Oil Jour., Vol. 1, p. 1-4.
- Montgomery, D. S. (1951): On the origin of the Athabasca oil; Proc. Athabasca Oil Sands Conf., Govt. of Alberta, Edmonton, p. 87.
- _____ (1956a): Our valuable research ally in Ottawa ... The Fuel Division; Can. Oil and Gas Ind., Vol. 9, No. 1, p. 37-40.
- _____ (1956b): The hydrodesulphurization of Coker distillate derived from Athabasca bitumen; Can. Mines Branch, Fuels Div., Rept. F. R. L.-237, 14 pages.
- Moore, T. V. and Hottel, H. C. (1958): Process for the recovery of oil from subterranean reservoirs; U. S. Pat. 2,853,136.

- Morse, R. A. (1957): Oil recovery by underground combustion; U. S. Pat. 2,793,696.
- Muir, W. L. G. (1951): Some suggestions for mining the Athabaska bituminous sands; *Western Miner*, Vol. 24, No. 10, p. 44-46.
- Nagy, B. and Lugay, J. (1960): Natural chromatography and the accumulation of petroleum in rocks in view of analyses of bitumen from the Athabasca deposits in Canada; *Experientia*, Vol. 17, p. 1-6.
- Nagy, B. and Gagnon, G. C. (1961): The geochemistry of the Athabasca petroleum deposits, I, Elution and spectroscopic analysis of the petroleum from the vicinity of McMurray, Alberta; *Geochim. et Cosmochim. Acta*, Vol. 23, p. 155-185.
- Narin, F. (1919): Art of separating the petroleum contents from petroleum-bearing sands; U. S. Pat. 1,312,266.
- Nauss, A. W. (1945): Cretaceous stratigraphy of Vermilion area, Alberta, Canada; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 29, No. 11, p. 1605-1629.
- Ness, R. C. (1951): Results of oil sands project discussed by technical group; *Can. Oil and Gas Ind.*, Vol. 3, No. 1, Oct. 1951.
- Nickle, C. O. (1947): Dominion's liquid bitumen find of great importance; *Oil Weekly*, Vol. 124, No. 10, p. 23-27.
- Oil in Canada (1951): Bituminous sands stratigraphy; Vol. 3, No. 50, p. 4444.
- _____ (1959): Alberta okays oil sand explosion; Vol. 11, No. 47, p. 14-15.
- Oilweek (1959a): Study committee finds no danger in sands A-blast; Vol. 10, No. 28, p. 20.
- _____ (1959b): Buried tar sand treasures still defy exploiters; Vol. 10, No. 28, p. 21-23.
- _____ (1959c): Alberta committee urges okay for oil sands A-blast; Vol. 10, No. 31, p. 18-19.
- _____ (1960): In situ combustion proposed for Athabasca; Vol. 11, No. 23, p. 13-14.
- Oil and Gas Journal (1960): Four-company team tackles Athabasca; Vol. 58, No. 3, p. 44-45.

- Parker, H. W. (1959): Initiating in situ combustion in a stratum; U. S. Pat 2,880,803.
- Pasternack, D. S. (1949): Report on operations at Bitumount during 1949; unpublished manuscript, Res. Coun. Alberta, Edmonton.
- _____ (1951): Hot water separation; Oil in Canada, Vol. 3, No. 51 p. 4485.
- _____ (1953): Alberta oil sands; Petroleum Eng., Vol. 25, No. 2, p. 58-68.
- _____ (1960): Petroleum substitutes from tar sands; Chem. Eng. Prog. Vol. 56, No. 4, p. 72-75.
- Pasternack, D. S. and Clark, K. A. (1951): The components of the bitume in Athabasca bituminous sand and their significance in the hot water separation process; Res. Coun. Alberta Rept. 58, 14 pag
- Pasternack, D. S., Hodgson, G. W. and Clark, K. A. (1951): Oil recov from Alberta oil sands by the hot water washing method; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 200-206.
- Peebles, A. A. (1953): Bituminous sands of Alberta; Eng., Vol. 175, p. 229-231 and 260.
- Pelzer, H. L. (1957): Oil recovery from underground reservoirs; U. S. Pat 2,788,071.
- Pengelley, M. (1960): The enigma of Athabasca; Imperial Oil Review, Apr 1960, p. 15-18.
- Peterson, W. S. and Gishler, P. E. (1950): A small fluidized solids pilot plant for the direct distillation of oil from Alberta bituminous sands; Can. Jour. Res., Vol. 28F, p. 62-70.
- _____ (1951a): The fluidized solids technique applied to Alberta oil sands problem; Proc. Athabasca Oil Sands Conf., Govt. Albe Edmonton, p. 207-236.
- _____ (1951b): Fluidized solids separation; Oil in Canada, Vol. 3, No. 51, p. 4488-4489.
- _____ (1951c): Oil from Alberta bituminous sands; Petroleum Eng., Vol. 239, No. 4, p. 66-74.
- Peterson, W. S., Keller, H. and Gishler, P. E. (1955): Fluidized solids coking of Canadian heavy crude oils; Contrib. Div. Applied Chem., Natl. Res. Coun., Ottawa.

- Petroleum Week (1960): Mining and ore disposal complicate tar sands development; August 5, 1960, p. 20-21.
- Plewes, A. C. (1951): Removal of sulphur from Alberta bitumen; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 306-329.
- Pratt, W. E. (1943): Oil in the earth; University of Kansas Press, Lawrence, p. 41.
- Preble, E. A. (1908): A biological investigation of the Athabaska-Mackenzie Region; U. S. Dept. Agr. North American Fauna, No. 27, p. 54-124.
- Quant, J. T., Schonebaum, R. C. and Tadema, H. J. (1958): Recovery of oil by underground combustion; Dutch Pat. 88,302.
- Reed, R. E., Read, D. W. and Tracht, J. H. (1960): Experimental aspects of reverse combustion in tar sands; Jour. Petroleum Tech., Vol. 12, p. 13.
- Rees, H. V. (1959): Process for the recovery of oil from oil-bearing minerals; U. S. Pat. 2,885,275.
- Richardson, J. (1851): Arctic searching expedition, a journal of a boat voyage through Rupert's land and the Arctic Sea, in search of the discovery ships under command of Sir John Franklin, with an appendix on the physical geography of North America; 2 vols., Longman, Brown, Green, and Longmans, London, 413 and 426 pages.
- Riecker, R. E. (1962): Hydrocarbon fluorescence and migration of petroleum; Bull. Am. Assoc. Petroleum Geol., Vol. 46, No. 1, p. 60-75.
- Rosewarne, P. V. and Connell, G. P. (1928): Report of experiments on the dehydration of bitumen emulsion from Alberta bituminous sands; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689-2, p. 96-103.
- Rosewarne, P. V. and Swinnerton, A. A. (1948): Report of laboratory investigations on the cold water separation of bitumen from Alberta bituminous sand; Can. Bureau Mines, Fuels Res. Lab., Rept. 90, 12 pages.
- Rosewarne, P. V., Chantler, H. McD. and Swinnerton, A. A. (1936): Analyses of Canadian crude oils, naphthas, shale oil and bitumen; Can. Mines Branch Rept. 765, 21 pages.
- Round, G. F. (1960): The shear strength of McMurray oil sands; Trans. Can. Inst. Min. Met., Vol. 63, p. 145-150.

- Rowland, L. O. (1951): Major companies study processes for mining and treating Athabasca bituminous sands to produce good refinery charge stock; *Oil in Canada*, Vol. 3, No. 50, p. 443.
- Royal Commission on the Development of Northern Alberta, Report (1958): Govt. Alberta, Edmonton, 115 pages.
- Royalite Oil Company Limited (1958): Submission to the Royal Commission on energy re Athabasca bituminous sands; unpublished manuscript, 3 pages.
- Rühl, W. (1951): Oil mining in Germany; *Proc. Athabasca Oil Sands Conf.* Govt. Alberta, Edmonton, p. 162-165.
- _____ (1952): Die Athabasca-oelsande-geologische technische und wirtschaftliche; *Entwicklung Ver. Schweizerische Petroleum-Geologen, u Ingenieure*, Vol. 19, No. 57, p. 48-49.
- Russell, L. S. (1932): Mollusca from the McMurray formation of northern Alberta; *Trans. Roy. Soc. Can.*, Ser. 3, Vol. 26, Sec. 4, p. 37-43.
- Salmonsson, G. J. W. (1959): Recovery of oil and gas from tar sands; U. S. Pat. 2,914,309.
- Schleicher, A. R. (1959): Oil recovery by in-situ combustion; U. S. Pat. 2,889,882.
- Schneider, K. (1924): Verfahren und Einrichtung zur Aufbereitung von Ölsanden; German Pat. 402,544, Class 23, Group 1.
- Scotland, W. A. and Benthim, H. (1954): Core logs and analysis results (1952-1954); for Athabasca oil sands project, unpublished manuscript, Calvin Consolidated Oil and Gas Co., Calgary.
- Scott, J., Collings, G. A. and Hodgson, G. W. (1953): Trace metals in the McMurray oil sands and other Cretaceous reservoirs of Alberta; *Can. Oil and Gas Ind.*, Vol. 6, p. 53-55.
- _____ (1954): Trace metals in the McMurray oil sands and other Cretaceous reservoirs of Alberta; *Trans. Can. Inst. Min. Met.*, Vol. 57, p. 34-40.
- Seyer, W. F. (1933): Conversion of fatty waxy substance into petroleum hydrocarbons; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 17, No. 1, p. 1251-1267.

- Shea, G. B. and Higgins, R. V. (1948): Laboratory study of the hot-water process for separating hydrocarbons from surface deposits of bituminous sandstones near Edna, California; U. S. Bureau Mines, Rept. Investig. 4246, 31 pages.
- _____ (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. I, Laboratory hot-water separation tests; U. S. Bureau Mines, Rept. Investig. 4871, p. 1-10.
- Sherborne, J. E. (1960): Apparatus for the recovery of hydrocarbons from bituminous sands; U. S. Pat. 2,921,010.
- Simm, C. N. (1956): Method of oil recovery by in situ combustion; U. S. Pat. 2,771,951.
- Simm, C. N. and DePriester, C. L. (1957): Method of re-establishing in situ combustion in petroliferous formations; U. S. Pat. 2,793,697.
- Slipper, S. E. (1935): Natural gas in Alberta; *Geology of Natural Gas*; Bull. Am. Assoc. Petroleum Geol., Vol. 19, No. 1 p. 1-57.
- Smith, R. L. and Watson, K. M. (1953): Oil recovery process; U. S. Pat. 2,642,943.
- _____ (1956): Oil recovery process; Can. Pat. 506,004.
- Smoley, E. R. and Schutte, A. H. (1951): Continuous contact coking; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 251-256.
- Sproule, J. C. (1938): Origin of McMurray oil sands, Alberta; Bull. Am. Assoc. Petroleum Geol., Vol. 22, No. 9, p. 1133-1152.
- _____ (1939): The Pleistocene geology of the Cree Lake Region, Saskatchewan; Trans. Roy. Soc. Can., Ser. 3, Vol. 33, Sec. 4, p. 101-110.
- _____ (1951): The McMurray formation in its relation to oil occurrences; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 6-25.
- Stegemeier, R. J. and Fischer, P. W. (1960): Recovery of oil from bituminous sands; U. S. Pat. 2,924,565.
- Sterba, M. J. (1951a): Thermal coking of oil; *Oil in Canada*, Vol. 3, p. 4491, 4498.

- Warren, T. E., Reed, R. L. and Price, H. S. (1960): Theoretical considerations of reverse combustion in tar sands; *Jour. Petroleum Tech.*, Vol. 12, p. 14.
- Warren, T. E., Booth, F. L., Carson, R. E. and Bowles, K. W. (1951a): Hydrogenation sulfur removal; *Oil in Canada*, Vol. 3, No. 51, p. 4492 and 4498.
- _____ (1951b): Hydrodesulfurization of coker distillate from Athabasca bitumen; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 289-305.
- Waterman, H. I. and Brakel, A. (1952): Report on bituminous sand of Alberta; *Ingenieur*, Vol. 64, No. 8, p. 12-24.
- Watson, K. M. (1958): Oil recovery by subsurface thermal processing; U. S. Pat. 2,825,408.
- Wenger, W. J., Hubbard, R. L. and Whisman, M. L. (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. II, Analytical data on asphalt properties and cracked products of the separated bitumens; U. S. Bureau Mines Rept. Investig. 4871, p. 11-28.
- Whiteaves, J. F. (1891): The fossils of the Devonian rocks of the McKenzie River Basin; *Geol. Surv. Can.*, Contrib. to Can. Palaeont., Vol. 1, Pt. 3, p. 197-253.
- _____ (1893): Notes on the Ammonites of the Cretaceous rocks of the district of Athabasca, with description of four new species; *Trans. Roy. Soc. Can.*, Ser. 3, Vol. 10, Sec. 4, p. 111-121.
- Wickenden, R. T. (1949): Some Cretaceous sections along the Athabasca River from the mouth of the Calling River to below Grand Rapids, Alberta; *Geol. Surv. Can. Paper* 49-15, 31 pages.
- _____ (1951a): Lower Cretaceous stratigraphy; *Oil in Canada*, Vol. 3, No. 50, p. 4439.
- _____ (1951b): Regional correlations of the Lower Cretaceous formations of the McMurray oil-sand area; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 39-45.
- _____ (1957): The interior plains; *Geology and Economic Minerals of Canada*, *Geol. Surv. Can.*, Econ. Geol. Ser. No. 1, 4th Ed., p. 247-282.
- Williams, G. D., Baadsgaard, H. and Steen, G. (1962): Potassium - Argon mineral dates from the Mannville group; *Jour. Alberta Soc. Petroleum Geol.*, Vol. 10, No. 6, p. 320-325.
- Williams, M. Y. (1949): Whence the oil of the Athabasca tar sands?; *Trans. Roy. Soc. Can.*, Ser. 3, Vol. 43, Sec. 4, p. 149-156.

PART II. SUBJECT HEADINGS

1. History

- Clark, K. A. (1957a): The Athabasca oil sands; Edmonton Geol. Soc. Quart., Vol. 1, No. 1 p. 3.
- _____ (1957b): The Athabasca oil sands; unpublished manuscript, Res. Coun. Alberta, Edmonton.
- Fawcett, T. (1889): Exploratory survey of Athabasca and Churchill Rivers; Rept. Dept. Interior Can., 1888, p. 72-82.
- Franklin, John (1828): Narrative of a second expedition to the shores of the polar sea in the years 1825, 1826 and 1827, including an account of the progress of a detachment to the eastward by John Richardson; John Murray, London, 477 pages.
- Isbister, A. K. (1855): On the geology of the Hudson's Bay Territories, and portions of the Arctic and North-western Regions of North America; Quart. Jour. Geol. Soc. London, Vol. 11, p. 497-520.
- MacKenzie, A. (): Voyages from Montreal through the continent of North America to the frozen and Pacific Oceans in 1789 and 1793; 2 Vols., published in 1911 by Courier Press, Toronto, 355 and 360 pages.
- Macoun, J. (1877): Geological and topographical notes on the lower Peace and Athabasca Rivers; Geol. Surv. Can. Rept. Prog. 1875-1876, p. 87-95.
- Meek, F. B. (1868): Remarks on the geology of the valley of the Mackenzie River, with figures and descriptions of the fossils from that region, in the Museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott Esq.; Trans. Chicago Acad. Sci., Vol. 1, p. 61-114.
- Preble, E. A. (1908): A biological investigation of the Athabasca-Mackenzie Region; U. S. Dept. Agr. North American Fauna, No. 27, p. 54-124.
- Richardson, J. (1851): Arctic searching expedition, a journal of a boat voyage through Rupert's land and the Arctic Sea, in search of the discovery ships under command of Sir John Franklin, with an appendix on the physical geography of North America; 2 vols., Longman, Brown, Green, and Longmans, London, 413 and 426 pages.
- Tyrell, J. B. (1916): Thompson's narrative of his explorations in Western America; Champlain Soc. Toronto, Publ. 12, 582 pages.

Voorhis, E. (1930): Historic forts and trading posts of the French regime and of the English fur trading companies; Dept. Interior, Ottawa, 188 pages.

2. Geology

Alcock, F. J. (1920): The origin of Lake Athabasca; Geog. Rev., Vol. 10, No. 6, p. 400-407.

Allan, J. A. (1920): The mineral resources of Alberta; Res. Coun. Alberta Rept. 1, p. 87-102.

_____ (1924): Salt well No. 2 at Waterways; Res. Coun. Alberta Rept 10, p. 48-53.

_____ (1929): Salt and gypsum in Alberta; Trans. Can. Inst. Min. Met., Vol. 32, p. 232-254.

_____ (1938): Salt deposits at McMurray, Alberta; Trans. Can. Inst. Min. Met., Vol. 40, p. 614-628.

_____ (1943): Rock salt deposits at Waterways, Alberta; Res. Coun. Alberta Rept. 34, Pt. 2, p. 40-57.

American Association of Petroleum Geologists (1951): Symposium on possible future petroleum provinces of North America, Am. Assoc. Petroleum Geol., Tulsa, Northern Alberta Oil Sands, p. 41-44

Badgley, P. C. (1952): Notes on the subsurface stratigraphy and oil and gas geology of the Lower Cretaceous series in central Alberta; Geol. Surv. Can. Paper 52-11, 12 pages.

Ball, M. W. (1935): Athabasca oil sands: apparent example of local origin of oil; Bull. Am. Assoc. Petroleum Geol., Vol. 19, No. 2, p. 153-171.

_____ (1941): Development of the Athabasca oil sands; Trans. Can. Inst. Min. Met., Vol. 44, p. 58-91.

Bell, R. (1884): Report on part of the basin of the Athabasca River, Northwest Territory; Geol. Surv. Can. Rept. Prog., 1882-83-84, Pt. CC, p. 5-35.

_____ (1908a): The tar sands of the Athabasca River, Canada; Trans. Am. Inst. Min. Eng., Vol. 38, p. 836-848.

_____ (1908b): The tar sands of the Athabasca River, Canada; Am. Inst. Min. Met. Eng., Vol. B 20, p. 157-169.

- Belyea, H. R. (1952): Notes on the Devonian system of the north-central plains of Alberta; Geol. Surv. Can. Paper 52-27, 45 pages.
- Burwash, R. A. (1957): Reconnaissance of subsurface Precambrian of Alberta; Bull. Am. Assoc. Petroleum Geol., Vol. 41, No. 1, p. 70-103.
- Camsell, C. and Malcolm, W. (1921): The MacKenzie River Basin; Geol. Surv. Can. Mem. 108, 151 pages.
- Carrigy, M. A. (1959a): Geology of the McMurray formation, Pt. III, General geology of the McMurray area; Res. Coun. Alberta Mem. 1, 130 pages.
- _____ (1959b): The significance of a grain size classification of the sands of the McMurray formation, Alberta; Proc. 5th World Petroleum Congr., Vol. 1, p. 575-590.
- _____ (1962): Effect of texture on the distribution of oil in the Athabasca oil sands, Alberta, Canada; Jour. Sed. Petrology; Vol. 32, No. 2, p. 312-325.
- Carrigy, M. A. and Zamora, W. J. (1960): The Athabasca Oil Sands; Oil Fields of Alberta, Alberta Soc. Petroleum Geol., Calgary, p. 38-49.
- Clapp, F. G. and Huntley, L. G. (1913): Petroleum and natural gas resources of Canada; Can. Mines Branch Summ. Rept. 1912, Rept. No. 224, p. 48-57.
- Clark, K. A. (1921): The McMurray tar sands; Can. Min. Jour., Vol. 42, No. 48, p. 943-944.
- _____ (1949): The Athabasca tar sands; Scientific Am., Vol. 181, No. 5, p. 52-55.
- _____ (1951a): Guide to the Alberta oil-sands area along the Athabasca River between McMurray and Bitumont and to the oil-sand separation plant of the Alberta Government; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 343-366.
- _____ (1951b): Athabasca bituminous sands; Fuel, Vol. 30, p. 49-53.
- _____ (1957a): The Athabasca oil sand; Edmonton Geol. Soc. Quart., Vol. 1, No. 1, p. 3.

- _____ (1957b): The Athabasca oil sands; unpublished manuscript, Res. Coun. Alberta, Edmonton.
- Clark, K. A. and Blair, S. M. (1925): The bituminous sands of northern Alberta; Res. Coun. Alberta Rept. 12, Ann. Rept. 1924, p. 46-65.
- _____ (1927): The bituminous sands of Alberta, Pt. I, Occurrence, Pt. II, Separation; Res. Coun. Alberta Rept. 18, 74 and 26 pages respectively.
- Clark, K. A. and Shea, G. B. (1954): Tar sands; Encyclopedia of Chemical Technology, Vol. 13, p. 633-645.
- Corbett, G. S. (1955): In situ origin of McMurray oil of northeastern Alberta and its relevance to general problem of origin of oil; Bull. Am. Assoc. Petroleum Geol., Vol. 39, No. 8, p. 1601-1649.
- Crickmay, C. H. (1954): Paleontological correlation of Elk Point and equivalents; in Ralph Leslie Rutherford Memorial Volume, Western Canada Sedimentary Basin Symposium, Am. Assoc. Petroleum Geol., Tulsa, p. 143-148.
- _____ (1957): Elucidation of some Western Canada Devonian formations; published by the author, Imperial Oil Ltd., Calgary, 15 pages.
- Dawson, G. M. (1897): Boring at Athabasca Landing; Geol. Surv. Can. Ann. Rept. 1895, Vol. 8, Pt. A, p. 8-16.
- _____ (1898): Boring at Athabasca Landing; Geol. Surv. Can. Ann. Rept. 1896, Vol. 9, Pt. A, p. 13-18.
- _____ (1899): Experimental borings in northern Alberta; Geol. Surv. Can. Ann. Rept. 1897, Vol. 10, Pt. A, p. 18-27.
- _____ (1901): Experimental borings in northern Alberta and Athabasca; Geol. Surv. Can. Ann. Rept. 1898, Vol. 11, Pt. A, p. 28-34.
- _____ (1902): Experimental borings in northern Alberta; Geol. Surv. Can. Ann. Rept. Vol. 12, Pt. A, Summ. Rept. 1899, p. 11-15.
- Ellison, A. H. (1957): Some operational notes for the McMurray area; Jour. Alberta Soc. Petroleum Geol., Vol. 5, No. 5, p. 107-108.
- _____ (1959): Evidence of supersaturated zones in the Athabasca oil sands; Jour. Alberta Soc. Petroleum Geol., Vol. 7, No. 8, p. 177-178.

- Ells, S. C. (1914a): Summary report on bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1913, Rept. 285, p. 54-62.
- _____ (1914b): Preliminary report on the bituminous sands of northern Alberta; Can. Mines Branch Rept. 281, 88 pages.
- _____ (1915a): Notes on clay deposits near McMurray, Alberta; Can. Mines Branch Bull. 10, 15 pages.
- _____ (1915b): Bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1914, Rept. 346, p. 60-73.
- _____ (1916a): Investigation of bituminous sands of northern Alberta; Can. Min. Jour., Vol. 37, p. 73-74.
- _____ (1916b): Investigations of bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1915, Rept. 421, p. 67-76.
- _____ (1917a): Bituminous sands of northern Alberta; Trans. Can. Inst. Min. Met., Vol. 20, p. 447-459.
- _____ (1917b): Investigation of bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1916, Rept. 454, p. 56-58.
- _____ (1919): The bituminous sands of northern Alberta; Geol. Mag., New Ser. Vol. 6, p. 142.
- _____ (1922): Bituminous sands of Alberta; Can. Mines Branch Summ. Rept. 1920, Rept. 574, p. 19-22.
- _____ (1924a): Bituminous sands of northern Alberta; Can. Mines Branch Summ. Rept. 1922, Rept. 605, p. 44-46.
- _____ (1924b): Extent and characteristics of northern Alberta bituminous sands; Natl. Petroleum News, Vol. 16, No. 15, p. 69-73.
- _____ (1924c): Bituminous sands of northern Alberta; Can. Mines Branch Rept. 625, 35 pages.
- _____ (1924d): Mineral resources and the mining industry, 1923, III, Bituminous sands of northern Alberta; Can. Mines Branch Rept. 616, p. 4-11.
- _____ (1924e): Bituminous sands of Alberta; Can. Min. Jour., Vol. 45, p. 298-304 and 400-403.

- _____ (1924f): The bituminous sands of northern Alberta; *Can. Min. Jour.*, Vol. 10, p. 358-359, p. 710-717.
- _____ (1924g): Bituminous sands of northern Alberta; *Petroleum World*, Vol. 21, p. 152.
- _____ (1926): Bituminous sands of northern Alberta; Occurrence and economic possibilities; Report on investigations to the end of 1924; *Can. Mines Branch Rept.* 632, 239 pages.
- _____ (1928a): Bituminous sands of northern Alberta; *Can. Inst. Min. Met. Trans.*, Vol. 30, p. 646-670. Also 2nd triennial Empire Min. Met. Congr., Canada 1927, Proc. Pt. 3, p. 130-154.
- _____ (1928b): Investigation of mineral resources and the mining industry, 1927, I, Bituminous sands of northern Alberta ... experimental drilling and paving operations, 1927, *Can. Mines Branch Rept.* No. 694, 45 pages.
- _____ (1930): Bituminous sands of northern Alberta, operations during 1929; *Can. Mines Branch Rept.* 719, p. 28-42.
- _____ (1931a): Bituminous sands of northern Alberta ... operations during 1930; *Can. Mines Branch Rept.* 723, p. 1-11.
- _____ (1931b): Fossil wood discovered in Alberta bituminous sands; *Can. Min. Jour.*, Vol. 52, No. 7, p. 171-172.
- _____ (1932): Exploration of bituminous sand areas in northern Alberta; *Can. Mines Branch Rept.* 727, p. 107-134.
- _____ (1934): Some economic aspects of the bituminous sands of northern Alberta; *Can. Mines Branch Rept.* 735, p. 10-29.
- _____ (1936): Bituminous sands in northern Alberta; *Min. Mag.*, Vol. 54, p. 329-341.
- Ells, S. C. and Swinnerton, A. A. (1937): Bituminous sands of Alberta; *Trans. Can. Inst. Min. Met.*, Vol. 40, p. 629-648.
- Falconer, W. L. (1951a): Stratigraphy of McMurray formation; Oil in Canada, Vol. 3, No. 50, p. 4440-4443.
- _____ (1951b): Stratigraphy of McMurray formation; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 26-29.
- Fraser, A. W. (1895): Report on boring at Athabasca Landing, Alberta; *Geol. Surv. Can. Ann. Rept.* Vol. 7, Pt. A, *Summ. Rept.* 1894, p. 6-14.

- Gallup, W. B. (1960): Current exploratory techniques in the Athabasca bituminous sands area; *Trans. Can. Inst. Min. Met.*, Vol. 63, p. 157-161.
- Garland, G. D. and Bower, M. E. (1959): Interpretation of aeromagnetic anomalies in northeastern Alberta; *Proc. 5th World Petroleum Congr.*, Vol. 1, p. 787-800.
- Goodman, A. J. (1935): Notes on the petroleum geology of Western Canada; *Inst. Petroleum Tech.*, Vol. 21, p. 221-273.
- Gordon, A. G. (1932): The anatomical structure of Mesozoic plants from the bituminous sands of the McMurray formation; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- Government of Canada (1949): Drilling and sampling of bituminous sands of northern Alberta, results of investigations 1942-1947; 3 volumes, *Can. Mines Branch Rept.* 826.
- Greiner, H. R. (1956): Methy dolomite of northeastern Alberta; Middle Devonian reef formation; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 40, No. 9, p. 2057-2080.
- Gussow, W. C. (1955): Time and migration of oil and gas; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 39, No. 5, p. 547-574.
- _____ (1956): Athabasca bituminous sands; 20th Int. Geol. Congr., Mexico, Vol. 3, p. 68-70.
- Hodgson, G. W. (1954): The McMurray oil field; *Alberta Soc. Petroleum Geol., News Bull.*, Vol. 2, No. 3, p. 1-3.
- Hume, G. S. (1924): Clay deposits on Athabasca River, Alberta; *Geol. Surv. Can. Summ. Rept.* 1923, Pt. B, p. 16-20.
- _____ (1933): Oil and gas in Western Canada; *Geol. Surv. Can. Econ. Geol. Ser. No. 5*, 2nd Ed., p. 229-237.
- _____ (1944): Petroleum Geology of Canada; *Geol. Surv. Can. Econ. Geol. Ser. No. 14*, p. 30-34.
- _____ (1947a): Results and significance of drilling operations in the Athabasca bituminous sands; *Trans. Can. Inst. Min. Met.*, Vol. 50, p. 298-333.
- _____ (1947b): The Interior Plains; in *Geology and Economic Minerals of Canada*, *Geol. Surv. Can., Econ. Geol. Ser. No. 1*, 3rd Ed., p. 189-219.

- _____ (1951a): Possible Lower Cretaceous origin of bitumen in bituminous sands of Alberta; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 66-75.
- _____ (1951b): Possible Lower Cretaceous origin; Oil in Canada, Vol. 3, No. 50, p. 4450.
- Huntley, L. G. (1915): Oil gas and water content of Dakota sand in Canada and United States; Trans. Am. Inst. Min. Met. Eng., Vol. 52, p. 329-352.
- Isbister, A. K. (1855): On the geology of the Hudson's Bay Territories, and portions of the Arctic and North-western Regions of North America; Quart. Jour. Geol. Soc. London, Vol. 11, p. 497-520.
- Kidd, F. A. (1951): Geology of the bituminous sand deposits of the McMurray area, Alberta; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 30-38.
- Kupsch, W. O. (1954): Bituminous sands in till of Peter Pond Lake area, Saskatchewan; Govt. Saskatchewan, Dept. Mineral Resources, Geol. Surv., Rept. 12, 35 pages.
- Link, T. A. (1931): The Alberta syncline; Bull. Am. Assoc. Petroleum Geol., Vol. 15, No. 5, p. 491-507.
- _____ (1951a): Source of oil in oil sands of Athabasca River, Alberta, Canada; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 55-65.
- _____ (1951b): Possible Devonian origin of bitumen; Oil in Canada, Vol. 3, No. 50, p. 4448.
- _____ (1951c): Source of oil in "Tar Sands" of the Athabasca River, Alberta, Canada; Bull. Am. Assoc. Petroleum Geol., Vol. 35, No. 4, p. 854-864.
- Lipson, J. (1958): Potassium-argon dating of sedimentary rocks; Bull. Geol. Soc. Am., Vol. 69, p. 137-150.
- McConnell, R. G. (1891): Tar sands on Athabasca River; Geol. Surv. Can. Ann. Rept. 5, Part S, p. 144-147.
- _____ (1893a): Report on a portion of the district of Athabasca, comprising the country between Peace River and Athabasca River north of Lesser Slave Lake; Geol. Surv. Can. Ann. Rept. 1890, Vol. 5, Pt. D, p. 5-67.
- _____ (1893b): Summary report on the Athabasca region, Alberta; Geol. Surv. Can. Ann. Rept., Vol. 5, Pt. A, Summ. Rept. 1890, p. 21-26A.

- MacDonald, W. D. (1947): A comparative study of the Waterways and older formations of the McMurray area; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- _____ (1955): The Waterways formation in the subsurface at McMurray, Alberta; *Jour. Alberta Soc. Petroleum Geol.*, Vol. 3, No. 7, p. 105-107.
- McGehee, J. R. (1949): Pre-Waterways Paleozoic stratigraphy of Alberta plains; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 33, No. 4, p. 603-613.
- McLearn, F. H. (1917): Athabasca River section, Alberta; *Geol. Surv. Can. Summ. Rept.* 1916, p. 145-151.
- _____ (1918): Peace River Section, Alberta; *Geol. Surv. Can. Summ. Rept.* 1917, Pt. C, p. 14-21.
- _____ (1932): Problems of the Lower Cretaceous of the Canadian interior; *Trans. Roy. Soc. Can., Ser. 3, Vol. 26, Sec. 4*, p. 157-175.
- _____ (1933): Pelecypods of the Lower Cretaceous Clearwater formation, northern Alberta; *Trans. Roy. Soc. Can., Ser. 3, Vol. 27, Sec. 4*, p. 139-156.
- _____ (1945): Revision of the Lower Cretaceous of the western interior of Canada; *Geol. Surv. Can. Paper 44-17, 2nd Ed.*, 14 pages.
- Macoun, J. (1877): Geological and topographical notes on the lower Peace and Athabasca Rivers; *Geol. Surv. Can. Rept. Prog.* 1875-1876, p. 87-95.
- Martin, L. J. (1954): Clearwater shale foraminifera, Athabasca River, Alberta; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.
- Meek, F. B. (1868): Remarks on the geology of the valley of the Mackenzie River, with figures and descriptions of the fossils from that region, in the Museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott Esq.; *Trans. Chicago Acad. Sci.*, Vol. 1, p. 61-114.
- Mellon, G. B. (1955): Age and origin of the McMurray formation; unpublished M. Sc. thesis, Univ. of Alberta, Edmonton.

- Mellon, G. B. and Wall, J. H. (1956): Geology of the McMurray formation, Pt. I, Foraminifera of the upper McMurray and basal Clearwater formations, Pt. II, Heavy minerals of the McMurray formation; Res. Coun. Alberta Rept. 72, 43 pages.
- Nauss, A. W. (1945): Cretaceous stratigraphy of Vermilion area, Alberta, Canada; Bull. Am. Assoc. Petroleum Geol., Vol. 29, No. 11, p. 1605-1629.
- Pasternack, D. S. (1953): Alberta oil sands; Petroleum Eng., Vol. 25, No. 2, p. 58-68.
- Peebles, A. A. (1953): Bituminous sands of Alberta; Eng., Vol. 175, p. 229-231 and 260.
- Pratt, W. E. (1943): Oil in the earth; University of Kansas Press, Lawrence, p. 41.
- Preble, E. A. (1908): A biological investigation of the Athabasca-Mackenzie Region; U. S. Dept. Agr. North American Fauna, No. 27, p. 54-124.
- Richardson, J. (1851): Arctic searching expedition, a journal of a boat voyage through Rupert's land and the Arctic Sea, in search of the discovery ships under command of Sir John Franklin, with an appendix on the physical geography of North America; 2 vols. Longman, Brown, Green, and Longmans, London, 413 and 426 pages.
- Russell, L. S. (1932): Mollusca from the McMurray formation of northern Alberta; Trans. Roy. Soc. Can., Ser. 3, Vol. 26, Sec. 4, p. 37-43.
- Scotland, W. A. and Benthim, H. (1954): Core logs and analysis results (1952-1954) for Athabasca Oil Sands Project; unpublished manuscript, Calvin Consolidated Oil and Gas Co., Calgary.
- Slipper, S. E. (1935): Natural gas in Alberta; Geology of Natural Gas, Bull. Am. Assoc. Petroleum Geol., Vol. 19, No. 1, p. 1-57.
- Sroule, J. C. (1938): Origin of McMurray oil sands, Alberta; Bull. Am. Assoc. Petroleum Geol., Vol. 22, No. 9, p. 1133-1152.
- _____ (1939): The Pleistocene geology of the Cree Lake Region, Saskatchewan; Trans. Roy. Soc. Can., Ser. 3, Vol. 33, Sec. 4, p. 101-110.
- _____ (1951): The McMurray formation in its relation to oil occurrences; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 6-25.

- Van Tuyl, F. M. and Parker, B. H. (1941): The time of origin and accumulation of petroleum; Colorado School of Mines Quart., Vol. 36, No. 2, p. 134-140.
- Warren, P. S. (1933): The age of the Devonian limestone at McMurray, Alberta; Can. Field Naturalist, Vol. 47, No. 8, p. 148-149.
- _____ (1951): Some stratigraphic features of the Upper Devonian sequence of the Canadian western plains; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 46-54.
- Whiteaves, J. F. (1891): The fossils of the Devonian rocks of the McKenzie River Basin; Geol. Surv. Can., Contrib. to Can. Paleont., Vol. 1, Pt. 3, p. 197-253.
- _____ (1893): Notes on the Ammonites of the Cretaceous rocks of the district of Athabasca, with description of four new species; Trans. Roy. Soc. Can., Ser. 3, Vol. 10, Sec. 4, p. 111-121.
- Wickenden, R. T. (1949): Some Cretaceous sections along the Athabasca River from the mouth of the Calling River to below Grand Rapids, Alberta; Geol. Surv. Can. Paper 49-15, 31 pages.
- _____ (1951a): Lower Cretaceous stratigraphy; Oil in Canada, Vol. 3, No. 50, p. 4439.
- _____ (1951b): Regional correlations of the Lower Cretaceous formations of the McMurray oil-sand area; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 39-45.
- _____ (1957): The interior plains; Geology and Economic Minerals of Canada, Geol. Surv. Can. Econ. Geol. Ser. No. 1, 4th Ed., p. 247-282.
- Williams, G. D., Baadsgaard, H. and Steen, G. (1962): Potassium-argon mineral dates from the Mannville group; Jour. Alberta Soc. Petroleum Geol., Vol. 10, No. 6, p. 320-325.
- Williams, M. Y. (1949): Whence the oil of the Athabasca tar sands?; Trans. Roy. Soc. Can., Ser. 3, Vol. 43, Sec. 4, p. 149-156.

3. Properties of the Oil Sands

(a) Physical

- Clark, K. A. (1944): Some physical properties of a sample of Alberta bituminous sand; Can. Jour. Res., Vol. 22F, p. 174-180.
- _____ (1951): Athabasca bituminous sands; Fuel, Vol. 30, p. 49-53.

- _____ (1957): Bulk densities, porosities and liquid saturations of good grade Athabasca oil sands; Res. Coun. Alberta Mimeo. Circ. 22, 22 pages.
- _____ (1959): Permeabilities of the Athabasca oil sands; Trans. Can. Inst. Min. Met., Vol. 63, p. 151-156.
- Clark, K. A. and Shea, G. B. (1954): Tar sands; Encyclopedia of Chemical Technology, Vol. 13, p. 633-645.
- Ward, S. H. and Clark, K. A. (1950): Determination of the viscosities and specific gravities of the oils in samples of Athabasca bituminous sand; Res. Coun. Alberta Rept. 57, 22 pages.

(b) Chemical

- Bowles, K. W. and Booth, F. L. (1947): Study of the composition of the separated bitumen from Alberta bituminous sands; Can. Bureau Mines, Fuel Res. Lab., Rept. 76, 32 pages.
- Boyd, M. L. and Montgomery, D. S. (1961): A study of the Athabasca bitumen from Abasand Quarry, Alberta, Canada, Pt. I, Early history, analysis of the bituminous sand, and structural analysis of the asphaltene fraction, Pt. II, The initial chromatographic separation of the pentane extract and the structure and properties of the resinous components; Can. Mines Branch Res. Rept. R78 and R88, 67 pages and 94 pages respectively.
- Champlin, J. B. and Dunning, H. N. (1960): A geochemical investigation of the Athabasca bituminous sands; Econ. Geol., Vol. 55, p. 797-804.
- Dyck, W. J. (1944): Rapid laboratory and field method for the determination of bitumen content of bituminous sands; Can. Bureau Mines Memo. Ser. No. 87, 9 pages.
- Hodgson, G. W. (1954): Vanadium, nickel and iron trace metals in crude oils of Western Canada; Bull. Am. Assoc. Petroleum Geol., Vol. 38, No. 12, p. 2537-2554.
- Hoffman, G. C. (1883): Chemical contributions to the geology of Canada from the Laboratory of the Survey; Geol. Surv. Can. Rept. Prog. 1880-1882, p. 3H.
- Hubbard, R. L. and Stanfield, K. E. (1949): Laboratory study of asphalt from bitumens and bituminous sandstone; U. S. Bureau of Mines, Rept. Investig. No. 4523, 22 pages.

- Katz, M. (1934): Alberta bitumen. 1. The composition of blown Alberta bitumen; *Can. Jour. Res.*, Vol. 10, p. 435-451.
- Kriebel, V. K. and Seyer, W. F. (1921): A chemical investigation of the asphalt in the tar sands of northern Alberta; *Jour. Am. Chem. Soc.*, Vol. 43, Pt. 1, p. 1337-1349.
- Montgomery, D. S. (1951): On the origin of the Athabasca oil; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 76-87.
- Nagy, B. and Lugay, J. (1960): Natural chromatography and the accumulation of petroleum in rocks in view of analyses of bitumen from the Athabasca deposit in Canada; *Experientia*, Vol. 17, p. 1-6.
- Nagy, B. and Gagnon, G. C. (1961): The geochemistry of the Athabasca petroleum deposit, I, Elution and spectroscopic analysis of the petroleum from the vicinity of McMurray, Alberta; *Geochim. et Cosmochim. Acta*, Vol. 23, p. 155-185.
- Pasternack, D. S. (1953): Alberta oil sands; *Petroleum Eng.*, Vol. 25, No. 2, p. 58-68.
- Pasternack, D. S. and Clark, K. A. (1951): The components of the bitumen in Athabasca bituminous sand and their significance in the hot water separation process; *Res. Coun. Alberta Rept.* 58, 14 pages.
- Riecker, R. E. (1962): Hydrocarbon fluorescence and migration of petroleum; *Bull. Am. Assoc. Petroleum Geol.*, Vol. 46, No. 1, p. 60-75.
- Rosewarne, P. V., Chantler, H. McD. and Swinnerton, A. A. (1936): Analyses of Canadian crude oils, naphthas, shale oil and bitumen; *Can. Mines Branch Rept.* 765, 21 pages.
- Scott, J., Collins, G. A. and Hodgson, G. W. (1953): Trace metals in the McMurray oil sands and other Cretaceous reservoirs of Alberta; *Can. Oil and Gas Ind.*, Vol. 6, p. 53-55.
- (1954): Trace metals in the McMurray oil sands and other Cretaceous reservoirs of Alberta; *Trans. Can. Inst. Min. Met.*, Vol. 57, p. 34-40.
- Swinnerton, A. A. (1944): Properties of asphalt made from Athabasca bituminous sand; *Can. Bureau Mines Memo. Ser.* 88, 17 pages.

4. Drilling

Elis, S. C. (1928): Investigation of mineral resources and the mining industry, 1927, Pt. 1, Bituminous sands of northern Alberta ... experimental drilling and paving operations, 1927; Can. Mines Branch Rept. No. 694, 45 pages.

_____ (1929): Core drilling bituminous sands of northern Alberta; Can. Mines Branch Rept. 710, 26 pages.

Gallup, W. B. (1960): Current exploratory techniques in the Athabasca bituminous sands area; Trans. Can. Inst. Min. Met., Vol. 63, p. 157-161.

Government of Canada (1949): Drilling and sampling of bituminous sands of northern Alberta, Results of investigations 1942-1947; 3 volumes, Can. Mines Branch Rept. 826.

Hall, P. B. (1951a): Coring bituminous sands; Oil in Canada, Vol. 3, No. 50, p. 4454.

_____ (1951b): Coring of the bituminous sands in the Fort McMurray district of Alberta; Proc. Athabasca Oil Sands Conf. Govt. Alberta, Edmonton, p. 101-107.

Hume, G. S. (1947): Results and significance of drilling operations in the Athabasca bituminous sands; Trans. Can. Inst. Min. Met., Vol. 50, p. 298-333.

_____ (1951a): Outline of drilling program; Oil in Canada, Vol. 3, No. 50, p. 4452.

_____ (1951b): Drilling and sampling bituminous sand deposits; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 98-100.

Scotland, W. A. and Benthim, H. (1954): Core logs and analysis results (1952-1954); for Athabasca Oil Sands Project; unpublished manuscript, Calvan Consolidated Oil and Gas Co., Calgary.

5. Mining

Bredvold, L. M. (1951): Mass movement of material in open pit iron ore mines; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 108-120.

Clark, K. A. and Alexander, E. L. (1951): Some laboratory results related to mining oil sands by block caving; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 158-161.

Djingheuzian, L. E. (1952): Preliminary notes on tailing disposal at a plant treating 20,000 to 100,000 cubic yards of Alberta bituminous sand per day; Can. Mines Branch, Fuels Div. Mimeo. Rept.

_____ (1953): Tailing disposal problems of Alberta tar sands; Can. Min. Jour., Vol. 74, No. 5, p. 69-75.

Latham, R. H. (1951a): Proposed mining methods; Oil in Canada, Vol. 3, No. 50, p. 4456-4457.

_____ (1951b): Proposed methods of mining Alberta oil sands; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 121-130.

Logan, H. A. (1951): Discussion of blasting; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 131-134.

McNicholas, F. S. (1951a): Block caving of oil sands; Oil in Canada, Vol. 3, No. 50, p. 4458.

_____ (1951b): Block caving; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 136-140.

Muir, W. L. G. (1951): Some suggestions for mining the Athabasca bituminous sands; Western Miner, Vol. 24, No. 10, pages 44-46.

Petroleum Week (1960): Mining and ore disposal complicate tar sands development; Petroleum Week, August 5, 1960, p. 20-21.

Round, G. F. (1960): The shear strength of McMurray oil sands; Trans. Can. Inst. Min. Met., Vol. 63, p. 145-150.

Ruhl, W. (1951): Oil Mining in Germany; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 162-165.

6. Recovery Methods

Adkins, W. E. (1948): New plant to process Athabasca oil sands; Petroleum Eng., April 1948, Vol. 19, No. 7, p. 121-126.

_____ (1950): Novel separation process unlocking Canada's oil sands; Chem. Eng., Vol. 57, No. 3, p. 103-105.

Anikin, P. I. (1957): Recovery of crude oil from tar sands; U. S. S. R. Pat. 108,518.

Armstrong, H. H. (1926): Method of recovering hydrocarbon oils from oil sands and the like; U. S. Pat. 1,607,977.

- Ball, M. W. (1941): Development of the Athabasca oil sands; *Trans. Can. Inst. Min. Met.*, Vol. 44, p. 58-91.
- Behning, P. D., Glass, E. D. and Rzasa, M. J. (1957): Oil recovery by underground combustion; U. S. Pat. 2,803,305.
- Bell, A. F. L. (1879): Apparatus for refining asphaltum; U. S. Pat. 581,457.
- Berg, C. H. (1959): Tar sand distillation process and apparatus; U. S. Pat. 2,905,595.
- Bergstrom, E. V. (1959): Method and system for producing oil tenaciously held in porous formations using a dredging operation; U. S. Pat. 2,880,981.
- Bruce, W. A. (1957): Method of initiating combustion in an oil reservoir; U. S. Pat. 2,796,132.
- Bruce, W. R. and Hodgson, G. W. (1951): Flow characteristics of sand suspensions; *Oil in Canada*, Vol. 3, No. 51, p. 4490.
- Bruce, W. R., Hodgson, G. W. and Clark, K. A. (1951): Flow characteristics of sand suspensions; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 237-247.
- _____ (1952): Hydraulic transportation of oil-sand tailings in small diameter pipes; *Trans. Can. Inst. Min. Met.*, Vol. 55, p. 422-426.
- Carpenter, P. G. (1959): Recovery of hydrocarbons from oil-bearing strata; U. S. Pat. 2,880,802.
- Chandrasekaran, K. and Weingaertner, E. (1956): Application of the phase-exchange method to demineralization of Athabasca tar sands; *Jour. Indian Inst. Sci.*, Vol. 38A, p. 169-176.
- Clark, K. A. (1922): The bituminous sand and its commercial development; *Res. Coun. Alberta Rept. 5*, Ann. Rept. 1921, p. 43-59.
- _____ (1924): Bituminous sands of northern Alberta; *Res. Coun. Alberta Rept. 10*, Ann. Rept. 1923, p. 59-72.
- _____ (1929): Bituminous sands of Alberta; Pt. III, Utilization; *Res. Coun. Alberta Rept. 18*, 33 pages.
- _____ (1930): The separation of the bitumen from Alberta bituminous sands; *Can. Min. Met. Bull.*, No. 212, p. 1385-1395.
- _____ (1931): Separation of bitumen from bituminous sands; *Nature*, Vol. 127, p. 199.

- _____ (1935): Recovery of oil from bituminous sands in northern Alberta; *Natl. Petroleum News*, Vol. 27, No. 27, p. 30, 32-36.
- _____ (1944): Hot-water separation of Alberta bituminous sand; *Trans. Can. Inst. Min. Met.*, Vol. 47, p. 257-274.
- _____ (1948): Extracting oil from bituminous sands; *Can. Pat.* 448,231.
- _____ (1949): The Athabasca tar sands; *Scientific American*, Vol. 181, No. 5, p. 52-55.
- _____ (1950): The hot water washing method for the recovery of oil from Alberta tar sands; *Can. Oil and Gas Ind.*, Vol. 3, No. 6, p. 46-49.
- _____ (1951a): Guide to the Alberta oil-sands area along the Athabasca River between McMurray and Bitumont and to the oil-sand separation plant of the Alberta Government; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 343-366.
- _____ (1951b): New technique taps Athabasca tar sands; *World Oil*, Vol. 132, No. 2, p. 205-208.
- _____ (1951c): Commercial development feasible for Alberta's bituminous sands; *Can. Oil and Gas Ind.*, Vol. 4, No. 10, p. 25-29.
- _____ (1951d): Athabasca bituminous sands; *Fuel*, Vol. 30, p. 49-53.
- _____ (1959): Monthly analyses of Athabasca river water, sampled at and near McMurray, Alberta; *Res. Coun. Alberta Mimeo. Circ.* No. 28, 2 pages.
- Clark, K. A. and Blair, S. M. (1926): Bituminous sand separation; Earth road treatments; *Res. Coun. Alberta Rept.* 16, *Ann. Rept.* 1925, p. 47-61.
- _____ (1927a): Bituminous sand separation; cracking tests on McMurray bitumen and on Wainwright crude oil. Bituminous sands, rock asphalts and road oiling in the United States; *Res. Coun. Alberta Rept.* 20, *Ann. Rept.* 1926, p. 39-50.
- _____ (1927b): The bituminous sands of Alberta, Pt. I, Occurrence, Pt. II, Separation; *Res. Coun. Alberta Rept.* 18, 74 and 26 pages respectively.

- Clark, K. A. and Pasternack, D. S. (1930): Separation plant at Dunvegan yards; Separation plant at Waterways; Laboratory studies; Res. Coun. Alberta Rept. 25, Ann. Rept. 1929, p. 48-60.
- _____ (1931a): Operation of the separation plant on the Clearwater River, Waterways; Res. Coun. Alberta Rept. 26, Ann. Rept. 1930, p. 41-62.
- _____ (1931b): Developing the use of bituminous sands; Contractors Record Eng. Rev., Vol. 45, p. 1270-1273, 1489-1492.
- _____ (1932): Hot water separation of bitumen from Alberta bituminous sand; Ind. Eng. Chem., Vol. 24, p. 1410-1416.
- _____ (1947): Elimination of water from wet crude oil obtained from bituminous sand by the hot water washing process, Pt. I, Continuous settling at atmospheric pressure; Can. Chem. Processing Ind., Vol. 31, p. 1007-1011.
- _____ (1948): Elimination of water from wet crude oil obtained from bituminous sand by the hot water washing process., Pt. II, Continuous settling under pressure; evaporation; Can. Chem. Processing Ind., Vol. 32, p. 32-36.
- _____ (1949): The role of very fine mineral matter in the hot water separation process as applied to Athabasca bituminous sand; Res. Coun. Alberta Rept. 53, 22 pages.
- Clark, K. A. and Shea, G. B. (1954): Tar sands; Encyclopedia of Chemical Technology, Vol. 13, p. 633-645.
- Clarke, N. S. (1926): Process for the separation of oil from oil sands and other like material; U. S. Pat. 1,592,179.
- Coulson, G. R. (1953): Process for separating oil from bituminous sands, shales, etc.; Can. Pat. 491,955.
- _____ (1956): Process for separating oil from bituminous sands, shales, etc.; Can. Pat. 529,888.
- _____ (1958): Separation of oil from bituminous sands, shales, etc.; U. S. Pat. 2,825,677.
- _____ (1959): Extraction of oil from shales and like oil bearing material; U. S. Pat. 2,911,349.

- Crawford, P. B. (1955): Recovery by combustion of petroleum oil from partially depleted subterranean reservoirs; U. S. Pat. 2,722,277.
- _____ (1957): Oil recovery from partially depleted reservoirs; U. S. Pat. 2,804,146.
- Davis, C. M. (1951a): Electrovolatilization of oil in situ; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 141-152.
- _____ (1951b): Athabasca oil, in situ recovery by electrovolatilization; Can. Oil and Gas Ind., Vol. 3, No. 11, p. 54-55.
- Djinguhezian, L. E. (1950a): The cold-water method applied to separation of oil from Alberta bituminous sands; Can. Oil and Gas Ind., Vol. 3, No. 2, p. 32-34.
- _____ (1950b): Pilot plant investigation on cold water separation of bitumen from Alberta tar sands; unpublished manuscript, Can. Mines Branch Rept. MD 70, 85 pages.
- _____ (1951a): Cold-water method of separation of bitumen from Alberta bituminous sand; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 185-199.
- _____ (1951b): Cold-water separation; Oil in Canada; Vol. 3, No. 51, p. 4486-4487.
- _____ (1952a): Cold water separation process; Trans. Can. Inst. Min. Met., Vol. 55, p. 1-14.
- _____ (1952b): Preliminary notes on tailing disposal at a plant treating 20,000 to 100,000 cubic yards of Alberta bituminous sand per day; Can. Mines Branch, Fuels Div. Mimeo. Rept.
- _____ (1953): Tailing disposal problems of Alberta tar sands; Can. Min. Jour., Vol. 74, No. 5, p. 69-75.
- Djinguhezian, L. E. and Warren, T. E. (1951): A study of cold-water separation of bitumen from Alberta bituminous sand on a pilot-plant scale; Can. Jour. Tech., Vol. 26, p. 170-189.
- Dolbear, S. H. (1924): Method of concentrating oil shales; U. S. Pat. 1,510,983.
- Doscher, T. M. and Reisberg, J. (1959): Recovery of oil from tar sands; U. S. Pat. 2,882,973.

- Elkins, L. E. (1956): Oil production from bituminous sands; U. S. Pat. 2,734,579.
- Ells, S. C. (1926): Bituminous sands of northern Alberta; Occurrence and economic possibilities; Report on investigations to the end of 1924; Can. Mines Branch Rept. 632, 239 pages.
- _____ (1932a): Recent progress in the commercial separation of bitumen from bituminous sand; Can. Mines Branch Rept. 727, Pt. VI, p. 135-139.
- _____ (1932b): Estimated cost of producing solid and liquid hydrocarbons from bituminous sand; Can. Mines Branch Rept. 727, p. 140-145.
- Eyre, R. T. (1957): Recovery of oil from bituminous sands; U. S. Pat. 2,790,750.
- Ferguson, J. C. and Adkins, W. E. (1952): Apparatus for the recovery of tar sands; Can. Pat. 488,928.
- Fischer, P. W., Kenny, V. and Scheffel, J. W. (1959): Recovery of hydrocarbons from tar sand; U. S. Pat. 2,903,407.
- Fitzsimmons, R. C. (1953): Process for recovering bitumen from tar sands; Can. Pat. 493,081.
- Fyleman, M. E. (1921): A process for separating mineral oils or the like from sand or rock; U. K. Pat. 163,519.
- _____ (1922): Separation of adherent oil or bitumen from rock; Jour. Soc. Chem. Ind., Vol. 41, p. 14T-16T.
- _____ (1927): Process for separating mineral oils or the like from sand or rock; U. S. Pat. 1,615,121.
- Garrison, A. D. and Kunetka, R. E. (1959): In situ combustion; U. S. Pat. 2,871,942.
- Gilmore, R. E., Rosewarne, P. V. and Swinnerton, A. A. (1926): Canadian shale oil and bitumen from bituminous sands as sources of gasoline and fuel by pressure cracking; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689, p. 121-132.
- Gilmore, R. E., Swinnerton, A. A. and Connell, G. P. (1929): The assay of bituminous sands; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 696, p. 83-103.

- Gishler, P. E. (1949): The fluidization technique applied to direct distillation of oil from bituminous sand; *Can. Jour. Res.*, Vol. 27F, p. 104-111.
- Gishler, P. E. and Peterson, W. S. (1949): The fluidized solids technique applied to the production of oil from Alberta bituminous sand; *Can. Oil and Gas Ind.*, Vol. 3, No. 1, p. 26-30.
- _____ (1956): Treatment of bituminous sand; *Can. Pat.* 530,920.
- Glinka, C. (1959): Method of extraction of oil from oil-containing minerals; *U. S. Pat.* 2,881,126.
- Government of Alberta (1959): Alberta Technical Committee report to the Minister of Mines and Minerals and the Conservation Board with respect to an experiment proposed by Richfield Oil Corporation involving an underground nuclear explosion beneath the McMurray oil sands with the objective of determining the feasibility of recovering the oil with the aid of the heat released from such an explosion; 55 pages.
- Haensel, V. (1956): Separating and cracking of oil from oil-bearing sands; *U. S. Pat.* 2,733,193.
- Haliburton, J. (1947): Liquid diffusion in porous media, with specific reference to the Athabasca tar sands; unpublished M. Sc. thesis, Univ. of British Columbia, Vancouver, 19 pages.
- Heilman, W. O. and Ogorzaly, H. J. (1955): Underground retorting for secondary oil recovery; *U. S. Pat.* 2,718,263.
- Hemminger, C. E. (1960): Water washing of tar sands; *U. S. Pat.* 2,940,919.
- Hill, T. W. (1952): Electro-thermal recovery of petroleum; *Producers Monthly*, Vol. 16, No. 11, p. 14-20.
- Hitzman, D. O. (1959): Recovery of petroleum from oil sands and the like; *U. S. Pat.* 2,907,389.
- Hodgson, G. W., Peterson, W. S. and Gishler, P. E. (1951): The flash distillation of wet bituminous sand oil in a fluidized solids still; unpublished manuscript, Natl. Res. Coun., Ottawa.
- Hodgson, G. W., Matchen, B., Peterson, W. S. and Gishler, P. E. (1952): Oil from Alberta bitumen. Simultaneous dehydration and coking using fluidized solids; *Ind. Eng. Chem.*, Vol. 44, p. 1492-1496.

- Hopper, D. A. (1945): A liquid diffusion in porous media referring in particular to the Athabasca tar sands; unpublished M. Sc. thesis, Univ. of British Columbia, Vancouver.
- Koch, R. L. (1957): Initiation of combustion in a subterranean petroleum reservoir; U. S. Pat. 2,818,117.
- Koch, R. L., Gleason, J. F. and Boston, W. G. (1954): In situ combustion field tested again; Oil and Gas Jour., Feb., p. 102.
- Kuhn, C. S. and Koch, R. L. (1953): In-situ combustion—newest method of increasing oil recovery; Oil and Gas Jour., Aug., p. 92-96, 113-114.
- Langford, C. T. and Teplitz, A. J. (1931): Method for separating bitumen from bituminous sands and similar bituminous materials; U. S. Pat. 1,820,917.
- Ljungström, F. (1956a): Verfahren zum Gewinnen von Öl und Gas aus unkonsolidierten, bitumenosen, geologischen Vorkommen; German Pat. 954,721, Class 26, Group 9.
- (1956b): Recovery of oil from shale in situ by electric heating; U. S. Pat. 2,732,195.
- (1957): Recovery of oil and gases from nonconsolidated bituminous geological formations by heating treatment in situ; U. S. Pat. 2,780,450.
- McClave, J. M. (1926): Process for the separation of hydrocarbons from earthy matter; U. S. Pat. 1,594,625.
- (1936): The recovery of oil from Athabasca oil sands; Can. Min. Jour., Vol. 56, Dec. 1936, p. 317-323.
- McMurray Asphaltum and Oil Limited (1924): Bituminous sand research by McMurray Asphaltum Oil Limited and Draper Manufacturing Company; Can. Min. Jour., Vol. 45, p. 1270-1271.
- Marx, J. W. and Tek, M. R. (1958): Oil recovery by in-situ combustion; U. S. Pat. 2,853,137.
- Matchen, B. and Gishler, P. E. (1951): A study of the oil produced by flash distillation of bituminous sand in a fluidized bed; unpublished manuscript No. C51-515, Natl. Res. Coun., Ottawa.
- Mjolsness, W. E. and Stewart, J. H. (1952): A proposed low-cost method for oil sands extraction; Northwest Oil Jour., Vol. 1, p. 101-109.

- Moore, T. V. and Hottel, H. C. (1958): Process for the recovery of oil from subterranean reservoirs; U. S. Pat. 2,853,136.
- Morse, R. A. (1957): Oil recovery by underground combustion; U. S. Pat. 2,793,696.
- Narin, F. (1919): Art of separating the petroleum contents from petroleum-bearing sands; U. S. Pat. 1,312,266.
- Oil in Canada (1959): Alberta okays oil sand explosion; Vol. 11, No. 47, p. 14-15.
- Oilweek (1959a): Study committee finds no danger in sands A-blast; Vol. 10, No. 28, p. 20.
- _____ (1959b): Alberta committee urges okay for oil sands A-blast; Vol. 10, No. 31, p. 18-19.
- Parker, H. W. (1959): Initiating in situ combustion in a stratum; U. S. Pat. 2,880,803.
- Pasternack, D. S. (1951): Hot water separation; Oil in Canada, Vol. 3, No. 51, p. 4485.
- _____ (1953): Alberta oil sands; Petroleum Eng., Vol. 25, No. 2, p. 58-68.
- Pasternack, D. S. and Clark, K. A. (1951): The components of the bitumen in Athabasca bituminous sand and their significance in the hot water separation process; Res. Coun. Alberta Rept. 58, 14 pages.
- Pasternack, D. S., Hodgson, G. W. and Clark, K. A. (1951): Oil recovery from Alberta oil sands by the hot water washing method; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 200-206.
- Pelzer, H. L. (1957): Oil recovery from underground reservoirs; U. S. Pat. 2,788,071.
- Peterson, W. S. and Gishler, P. E. (1950): A small fluidized solids pilot plant for the direct distillation of oil from Alberta bituminous sands; Can. Jour. Res., Vol. 28F, p. 62-70.
- (1951a): The fluidized solids technique applied to Alberta oil sands problem; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 207-236.

- _____ (1951b): Fluidized solids separation; Oil in Canada, Vol. 3, No. 51, p. 4488-4489.
- _____ (1951c): Oil from Alberta bituminous sands; Petroleum Eng., Vol. 239, No. 4, p. 66-74.
- Peterson, W. S., Keller, H., and Gishler, P. E. (1955): Fluidized solids coking of Canadian heavy crude oils; Contrib. Div. of Applied Chem., Natl. Res. Coun., Ottawa.
- Reed, R. E., Read, D. W. and Tracht, J. H. (1960): Experimental aspects of reverse combustion in tar sands; Jour. Petroleum Tech., Vol. 12, p. 13.
- Rees, H. V. (1959): Process for the recovery of oil from oil-bearing minerals; U. S. Pat. 2,885,275.
- Rosewarne, P. V. and Connell, G. P. (1928): Report of experiments on the dehydration of bitumen emulsion from Alberta bituminous sands; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689-2, p. 96-103.
- Rosewarne, P. V. and Swinnerton, A. A. (1948): Report of laboratory investigations on the cold water separation of bitumen from Alberta bituminous sand; Can. Bureau Mines, Fuel Res. Lab., Rept. 90, 12 pages.
- Round, G. F. (1960): The shear strength of McMurray oil sands; Trans. Can. Inst. Min. Met., Vol. 63, p. 145-150.
- Rühl, W. (1952): Die Athabasca-Oelsande-geologische technische und wirtschaftliche; Entwicklung Ver. Schweizerische Petroleum-Geologen u Ingenieure, Vol. 19, No. 57, p. 48-49.
- Salmonsson, G. J. W. (1959): Recovery of oil and gas from tar sands; U. S. Pat. 2,914,309.
- Schleicher, A. R. (1959): Oil recovery by in-situ combustion; U. S. Pat. 2,889,882.
- Schneider, K. (1924): Verfahren und Einrichtung zur Aufbereitung von Ölsanden; German Pat. 402,544, Class 23, Group 1.
- Shea, G. B. and Higgins, R. V. (1948): Laboratory study of the hot-water process for separating hydrocarbons from surface deposits of bituminous sandstones near Edna, California; U. S. Bureau Mines, Rept. Investig. 4246, 31 pages.

- _____ (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. I, Laboratory hot-water separation tests; U. S. Bureau Mines, Rept. Investig. 4871, p. 1-10.
- Sherborne, J. E. (1960): Apparatus for the recovery of hydrocarbons from bituminous sands; U. S. Pat. 2,921,010.
- Simm, C. N. (1956): Method of oil recovery by in situ combustion; U. S. Pat. 2,771,951.
- Simm, C. N. and DePriester, C. L. (1957): Method of re-establishing in situ combustion in petroliferous formations; U. S. Pat. 2,793,697.
- Smith, R. L. and Watson, K. M. (1953): Oil recovery process; U. S. Pat. 2,642,943.
- _____ (1956): Oil recovery process; Can. Pat. 506,004.
- Smoley, E. R. and Schutte, A. H. (1951): Continuous contact coking; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 251-256.
- Stegemeier, R. J. and Fischer, P. W. (1960): Recovery of oil from bituminous sands; U. S. Pat. 2,924,565.
- Stewart, J., Fulton, S. C. and Langer, A. W. (1956): Recovery of oil from bituminous sands; U. S. Pat. 2,772,209.
- Tadema, H. J. (1959): Petroleum production by underground combustion; U. S. Pat. 2,874,777.
- Tadema, H. J. and Quant, J. Th. (1957): Subterranean ignition of petroleum or oil residues; Dutch Pat. 85,837.
- Tek, M. R. and Marwil, S. J. (1959): Separation and recovery of oil from oil sands; U. S. Pat. 2,910,424.
- Tipman, E. and Hodgson, G. W. (1956): Sedimentation in emulsions of water in petroleum; Jour. Petroleum Tech., Note 366, Vol. 8, No. 9, p. 91-93.
- Trantham, J. C. and Dixon, H. O. (1959): Oil recovery by in-situ combustion; U. S. Pat. 2,889,881.
- Walter, H. (1958): Oil recovery with in-situ combustion; U. S. Pat. 2,839,141.

- Ward, S. H. and Clark, K. A. (1947): Examination of the possibilities of water-drive as a means of recovery of oil from Alberta bituminous sand; unpublished manuscript, Res. Coun. Alberta, Edmonton, 17 pages.
- Warren, T. E. (1950): An outline of field operations for processing Alberta bituminous sands; Oil in Canada, Vol. 2, No. 50, p. 24.
- (1951a): The distribution of heat liberated from a well in bituminous sand; Oil in Canada, Vol. 3, No. 51, p. 4484.
- (1951b): Distribution of heat liberated from a well in bituminous sand; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 153-157.
- Warren, T. E. and Bowles, K. W. (1934): Description of an apparatus for continuous hydrogenation and experiments on coal tar, bitumen, and suspension of powdered coal in coal tar; Can. Mines Branch, Investig. Fuels and Fuel Testing, Rept. 737, p. 86-106.
- (1947): The bituminous sands of Alberta, Canada, as a source of liquid fuels; Trans. Fuel Economy Conf., World Power Conf., Sec. A3, Paper No. 5, 10 pages.
- Warren, T. E., Burroughs, E. J. and Djingheuzian, L. E. (1950): The cold water method applied to separation of oil from Alberta bituminous sand; Can. Oil and Gas Ind., Vol. 3, No. 2, p. 32-34.
- Warren, T. E., Reed, R. L. and Price, H. S. (1960): Theoretical considerations of reverse combustion in tar sands; Jour. Petroleum Tech., Vol. 12, p. 14.
- Waterman, H. I. and Brakel, A. (1952): Report on bituminous sand of Alberta; Ingenieur, Vol. 64, No. 8, p. 12-24.
- Watson, K. M. (1958): Oil recovery by subsurface thermal processing; U. S. Pat. 2,825,408.
- Wenger, W. J., Hubbard, R. J. and Whisman, M. L. (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. II, Analytical data on asphalt properties and cracked products of the separated bitumens; U. S. Bureau Mines Rept. Investig. 4871, p. 11-28.

7. Refining

- Adkins, W. E. (1948): New plant to process Athabasca oil sands; *Petroleum Eng.*, April 1948, Vol. 19, No. 7, p. 121-126.
- Bell, A. F. L. (1879): Apparatus for refining asphaltum; U. S. Pat. 581,457.
- Berg, C. H. (1951a): Mild hydrogenation of bitumen; *Oil in Canada*, Vol. 3, No. 51, p. 4491.
- _____ (1951b): Refining of high sulphur stocks by the cobalt molybdate process; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 271-288.
- Boomer, E. H. (1931): Natural gas research - hydrogenation; *Res. Coun. Alberta Rept. 26, Ann. Rept. 1930*, p. 66-74.
- Boomer, E. H. and Edwards, J. (1935): Hydrogenation in a tetralin medium. Destructive hydrogenation of bitumen and pitch; *Can. Jour. Res.*, Vol. 13B, p. 323-330.
- Boomer, E. H. and Saddington, A. W. (1930): On the hydrogenation of bitumen from bituminous sands of Alberta; *Can. Jour. Res.*, Vol. 2, p. 376-383.
- _____ (1931): On the hydrogenation of bitumen from the bituminous sands of Alberta; *Can. Jour. Res.*, Vol. 4, p. 517-539.
- Booth, F. L., Carson, R. E., Bowles, K. W. and Montgomery, D. S. (1958): Low pressure hydrogenation of coker distillate from Athabasca bitumen; *Can. Mines Branch Rept. R30*, 92 pages.
- Bowles, K. W. and Warren, T. E. (1948): Hydrogenation of Alberta bitumen; *Can. Bureau Mines, Fuel Res. Lab. Rept. 96*, 120 pages.
- Brooks, B. T. (1952): Evidence of catalytic action in petroleum formation; *Ind. Eng. Chem.*, Vol. 44, p. 2570-2577.
- Carson, R. E. and Booth, F. L. (1952): Natural gas requirements for processing Alberta bituminous sands; unpublished manuscript, *Can. Mines Branch, Fuel Res. Lab.*, 8 pages.
- _____ (1951): Guide to the Alberta oil-sands area along the Athabasca River between McMurray and Bitumont and to the oil-sand separation plant of the Alberta Government; *Proc. Athabasca Oil Sands Conf.*, Govt. Alberta, Edmonton, p. 343-366.

- Clark, K. A. and Blair, S. M. (1927): Bituminous sand separation: Cracking tests on McMurray bitumen and on Wainwright crude oil. Bituminous sands, rock asphalts and road oiling in the United States; Res. Coun. Alberta Rept. 20, Ann. Rept. 1926, p. 39-50.
- Egloff, G. and Morrell, J. C. (1926): The cracking of bitumen from Canadian Alberta Tar Sands; Trans. Am. Inst. Chem. Eng., Vol. 18, p. 347-363.
- _____ (1927a): Cracking of bitumen from tar sand; Oil and Gas Jour., Vol. 25, No. 32, p. 192.
- _____ (1927b): Cracking of bitumen derived from Alberta tar sands; Can. Chem. Met., Vol. 11, p. 33.
- Gilmore, R. E., Rosewarne, P. V. and Swinnerton, A. A. (1926): Canadian shale oil and bitumen from bituminous sands as sources of gasoline and fuel by pressure cracking; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689, p. 121-132.
- Gilmore, R. E., Swinnerton, A. A. and Connell, G. P. (1929): The assay of bituminous sands; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 696, p. 83-103.
- Gishler, P. E. (1949): The fluidization technique applied to direct distillation of oil from bituminous sand; Can. Jour. Res., Vol. 27F, p. 104-111.
- Gishler, P. E. and Peterson, W. S. (1949): The fluidized solids technique applied to the production of oil from Alberta bituminous sand; Can. Oil and Gas Ind., Vol. 3, No. 1, p. 26-30.
- Haanel, B. F. and Gilmore, R. E. (1933): Experiments on the hydrogenation of Alberta bitumen and on the effects of pressure on the pyrolysis of methane; Can. Mines Branch Rept. 725, p. 112-114.
- Hodgson, G. W., Peterson, W. S. and Gishler, P. E. (1951): The flash distillation of wet bituminous sand oil in a fluidized solids still; unpublished manuscript, Natl. Res. Coun., Ottawa.
- Hodgson, G. W., Matchen, B., Peterson, W. S. and Gishler, P. E. (1952): Oil from Alberta bitumen. Simultaneous dehydration and coking using fluidized solids; Ind. Eng. Chem., Vol. 44, p. 1492-1496.
- Katz, M. (1934): Alberta bitumen. 1. The composition of blown Alberta bitumen; Can. Jour. Res., Vol. 10, p. 435-451.

- Matchen, B. and Gishler, P. E. (1951): A study of the oil produced by flash distillation of bituminous sand in a fluidized bed; unpublished manuscript No. C51-51S, Natl. Res. Coun., Ottawa.
- Montgomery, D. S. (1956): The hydrodesulphurization of Coker distillate derived from Athabasca bitumen; Can. Mines Branch, Fuels Div., Rept. F.R.L.-237, 14 pages.
- Peterson, W. S. and Gishler, P. E. (1950): A small fluidized solids pilot plant for the direct distillation of oil from Alberta bituminous sands; Can. Jour. Res., Vol. 28F, p. 62-70.
- _____ (1951a): The fluidized solids technique applied to Alberta oil sands problem; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 207-236.
- _____ (1951b): Fluidized solids separation; Oil in Canada, Vol. 3, No. 51, p. 4488-4489.
- Peterson, W. S., Keller, H. and Gishler, P. E. (1955): Fluidized solids coking of Canadian heavy crude oils; Contrib. Div. of Applied Chem., Natl. Res. Coun., Ottawa.
- Plewes, A. C. (1951): Removal of sulphur from Alberta bitumen; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 306-329.
- Rosewarne, P. V. and Connell, G. P. (1928): Report of experiments on the dehydration of bitumen emulsion from Alberta bituminous sands; Can. Mines Branch, Investig. Fuel and Fuel Testing, Rept. 689-2, p. 96-103.
- Sterba, M. J. (1951a): Thermal coking of oil; Oil in Canada, Vol. 3, p. 4491 and 4498.
- _____ (1951b): Thermal coking of oil from Alberta bituminous sand; Proc. Athabasca Oil Sand Conf., Govt. Alberta, Edmonton, p. 257-270.
- Warren, T. E. (1933): Report of hydrogenation and pressure cracking experiments on Alberta bitumen from the production of motor fuel; Can. Mines Branch Rept. 725, p. 115-128.
- _____ (1934): Report of experimental work in the hydrogenation of Canadian coal, coal tar and bitumen for the production of motor fuel; Can. Mines Branch Rept. 737, p. 1-31.

_____ (1950): An outline of field operations for processing Alberta bituminous sands; *Oil in Canada*, Vol. 2, No. 50, p. 24.

Warren, T. E. and Bowles, K. W. (1934): Description of an apparatus for continuous hydrogenation and experiments on coal tar, bitumen, and suspension of powdered coal in coal tar; *Can. Mines Branch, Investig. Fuel and Fuel Testing*, Rept. 737, p. 86-106.

_____ (1947): The bituminous sands of Alberta as a source of liquid fuels; *Eng. Jour.*, Vol. 30, p. 597-600.

_____ (1948): Hydrogenation of Alberta bitumen; *Can. Mines Branch Memo. Ser. No. 96*, 120 pages.

Warren, T. E., Booth, F. L., Carson, R. E. and Bowles, K. W. (1951a): Hydrogenation sulfur removal; *Oil in Canada*, Vol. 3, No. 51, p. 4492 and 4498.

_____ (1951b): Hydrodesulfurization of coker distillate from Athabasca bitumen; *Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton*, p. 289-305.

8. Economics

Blair, S. M. (1950): Report on the Alberta bituminous sands; *Govt. Alberta, Edmonton*, 82 pages.

Clark, K. A. (1951): Commercial development feasible for Alberta's bituminous sands; *Can. Oil and Gas Ind.*, Vol. 4, No. 10, p. 25-29.

Ells, S. C. (1932): Estimated cost of producing solid and liquid hydrocarbons from bituminous sand; *Can. Mines Branch Rept. 727*, p. 140-145.

_____ (1934): Some economic aspects of the bituminous sands of northern Alberta; *Can. Mines Branch Rept. 735*, p. 10-29.

Government of Alberta (1950): Engineering and economic data from operation of Bitumount plant - summer 1949; unpublished manuscript, *Oil Sands Project*, Govt. Alberta, Edmonton.

_____ (1960): Report to the Lieutenant Governor in Council with respect to the application of Great Canadian Oil Sands Limited under part VI A of the Oil and Gas Conservation Act; 81 pages.

Hall, H. H. (1951a): Pipeline transport from oil sands; *Oil in Canada*, Vol. 3, No. 50, p. 4460-4461.

_____ (1951b): Pipelines from the bituminous sands of Alberta; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 330-333.

9. Utilization

Clark, K. A. (1923): The bituminous sands of northern Alberta, their separation and their utilization in road construction; Res. Coun. Alberta Rept. 8, Ann. Rept. 1922, p. 42-58.

_____ (1928a): The availability of the Alberta bituminous sands for production of fuel oil; Trans. Fuel Conf., World Power Conf., London, 1928, Vol. 1, p. 581-584.

_____ (1928b): Bituminous treatment of gravel roads; Res. Coun. Alberta Rept. 22, Ann. Rept. 1927, p. 42-48.

_____ (1929a): Bituminous sands of Alberta; Pt. III, Utilization; Res. Coun. Alberta Rept. 18, 33 pages.

_____ (1929b): Asphalt emulsion and gravel road treatment; Res. Coun. Alberta Rept. 24, Ann. Rept. 1928, p. 39-48.

_____ (1945): Asphaltic road oils from Alberta bituminous sand; Can. Chem. Processing Ind., Vol. 29, p. 616-617.

Clark, K. A. and Blair, S. M. (1926): Bituminous sand separation; Earth road treatments; Res. Coun. Alberta Rept. 16, Ann. Rept. 1925, p. 47-61.

_____ (1927): Bituminous sand separation; cracking tests on McMurray bitumen and on Wainwright crude oil. Bituminous sands, rock asphalts and road oiling in the United States; Res. Coun. Alberta Rept. 20, Ann. Rept. 1926, p. 39-50.

Clark, K. A. and Donvito, S. (1943): Asphaltic road oils from Abasand diluted crude; unpublished manuscript, Res. Coun. Alberta, Edmonton, 22 pages.

Clark, K. A. and Pasternack, D. S. (1931): Developing the use of bituminous sands; Contractors Record Eng. Rev., Vol. 45, p. 1270-1273, 1489-1492.

Ells, S. C. (1924): Bituminous sands and their use for road surfacing material; Natl. Petroleum News, Vol. 16, No. 17, p. 75-80, 82.

_____ (1927): Use of Alberta bituminous sands for surfacing highways; Can. Mines Branch Rept. 684, 31 pages.

- (1928): Investigation of mineral resources and the mining industry, 1927. I. Bituminous sands of northern Alberta ... experimental drilling and paving operations, 1927; Can. Mines Branch Rept. No. 694, 45 pages.
- Lilge, E. O. (1945): Purification of silica sand ... Alberta tar sands suitable for glass manufacturing; Can. Chem. Processing Ind., Vol. 29, p. 480-482.
- Pasternack, D. S. (1960): Petroleum substitutes from tar sands; Chem. Eng. Prog., Vol. 56, No. 4, p. 72-75.
- Shea, G. B. and Higgings, R. V. (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. I, Laboratory hot-water separation tests; U. S. Bureau Mines, Rept. Investi. 4871, p. 1-10.
- Swinnerton, A. A. (1944): Properties of asphalt made from Athabasca bituminous sand; Can. Bureau Mines Memo. Ser. 88, 17 pages.
- Warren, T. E. and Bowles, K. W. (1947a): The bituminous sands of Alberta as a source of liquid fuels; Eng. Jour., Vol. 30, p. 597-600.
- (1947b): The bituminous sands of Alberta, Canada, as a source of liquid fuels; Trans. Fuel Economy Conf., World Power Conf., Sec. A3, Paper No. 5, 10 pages.
- Wenger, W. J., Hubbard, R. L. and Whisman, M. L. (1952): Separation and utilization studies of bitumens from bituminous sandstones of the Vernal and Sunnyside, Utah, deposits, Pt. II, Analytical data on asphalt properties and cracked products of the separated bitumens; U. S. Bureau Mines Rept. Investig. 4871, p. 11-28.

10. Patents

Chapter VI of EIs (1926) contains a description of the following patents issued prior to 1924.

Canadian Patents

165,468	194,436	222,951	236,455	238,222
185,181	199,451	230,423	237,127	238,772
188,034	202,622	230,622	237,128	241,237
188,035	203,676	234,272	237,286	241,238
188,036	207,590	234,961	237,508	241,240
188,464	212,908	235,114	237,770	244,540
194,319	214,551	235,611	237,773	245,317

German Patents

99,566
204,256

United Kingdom Patent

163,519

United States of America Patents

452,764	581,546	722,500	1,394,481
469,777	596,468	757,387	1,396,173
505,416	617,226	779,198	1,396,174
507,885	617,712	821,323	1,409,388
549,399	652,594	918,628	1,424,998
580,592	655,416	1,060,010	1,432,170
581,451	655,430	1,190,633	1,514,162

Citations to the following patents are listed in the bibliography under the inventor's name.

Canadian Patents

448,231 Clark, K. A. (1948b)
488,928 Ferguson, J. C. and Adkins, W. E. (1952)
491,955 Coulson, G. R. (1953)
493,081 Fitzsimmons, R. C. (1953)
506,004 Smith, R. L. and Watson, K. M. (1956)
529,888 Coulson, G. R. (1956)
530,920 Gishler, P. E. and Peterson, W. S. (1956)

Dutch Patents

85,837 Tadema, H. J. and Quant, J. Th. (1957)
88,302 Quant, J. T., Schonebaum, R. C. and Tadema, H. J. (1958)

German Patents

402,544 Schneider, K. (1924)
954,721 Ljungstrom, F. (1956a)

United Kingdom Patents

163,519 Fyleman, M. E. (1921)

United States of America Patents

581,457 Bell, A. F. L. (1879)
1,312,266 Narin, F. (1919)
1,510,983 Dolbear, S. H. (1924)
1,592,179 Clarke, N. S. (1926)
1,594,625 McClave, J. M. (1926)
1,607,977 Armstrong, H. H. (1926)

- 1,615,121 Fyleman, M. E. (1927)
 1,820,917 Langford, C. T. and Teplitz, A. J. (1931)
 2,642,943 Smith, R. L. and Watson, K. M. (1953)
 2,718,263 Heilman, W. O. and Ogarzaly, H. J. (1955)
 2,727,277 Crawford, P. B. (1955)
 2,732,195 Ljungstrom, F. (1956b)
 2,733,193 Haensel, V. (1956)
 2,734,579 Elkins, L. E. (1956)
 2,771,951 Simm, C. N. (1956)
 2,772,209 Stewart, J., Fulton, S. C. and Langer, A. W. (1956)
 2,780,450 Ljungstrom, F. (1957)
 2,788,071 Pelzer, H. L. (1957)
 2,790,750 Eyre, R. T. (1957)
 2,793,696 Morse, R. A. (1957)
 2,793,697 Simm, C. N. and DePriester, C. L. (1957)
 2,796,132 Bruce, W. A. (1957)
 2,803,305 Behning, P. D., Glass, E. D. and Rzasa, M. J. (1957)
 2,804,146 Crawford, P. B. (1957)
 2,818,117 Koch, R. L. (1957)
 2,825,408 Watson, K. M. (1958)
 2,825,677 Coulson, G. R. (1958)
 2,839,141 Walter, H. (1958)
 2,853,136 Moore, T. V. and Hottel, H. C. (1958)
 2,853,137 Marx, J. W. and Tek, M. R. (1958)
 2,871,942 Garrison, A. D. and Kunetka, R. E. (1959)
 2,874,777 Tadema, H. J. (1959)
 2,880,802 Carpenter, P. G. (1959)
 2,880,803 Parker, H. W. (1959)
 2,880,981 Bergstrom, E. V. (1959)
 2,881,126 Glinka, C. (1959)
 2,882,973 Doscher, T. M. and Reisberg, J. (1959)
 2,885,275 Rees, H. V. (1959)
 2,889,881 Trantham, J. C. and Dixon, H. O. (1959)
 2,889,882 Schleicher, A. R. (1959)
 2,903,407 Fischer, P. W., Kenny, V. and Scheffel, J. W. (1959)
 2,905,595 Berg, C. H. (1959)
 2,907,389 Hitzman, D. O. (1959)
 2,910,424 Tek, M. R. and Marwil, S. J. (1959)
 2,911,349 Coulson, G. R. (1959)
 2,914,309 Salmonsson, G. J. W. (1959)
 2,921,010 Sherborne, J. E. (1960)
 2,924,565 Stegemeier, R. J. and Fischer, P. W. (1960)
 2,940,919 Hemminger, C. E. (1960)

Union of Soviet Socialist Republics

- 108,518 Anikin, P. I. (1957)

11. Reports of Royal Commissions, and Submissions to Government Agencies

- Adkins, W. E. (1949): Report to the board of trustees on oil sands project from inception to December 1948; unpublished manuscript, Govt. Alberta, Edmonton.
- _____ (1950): Report to the Board of Trustees on the Government oil sands project from January 1, 1949 to December 31, 1949; unpublished manuscript, Govt. Alberta, Edmonton.
- Blair, S. M. (1950): Report on the Alberta bituminous sands; Govt. Alberta, Edmonton, 82 pages.
- Clark, K. A. (1955): Athabasca oil sands; Part of Govt. Alberta brief for Gordon Royal Commission.
- Government of Alberta (1950): Engineering and economic data from operation of Bitumount plant - summer 1949; unpublished manuscript, oil sands project, Govt. Alberta, Edmonton.
- _____ (1959): Alberta Technical Committee report to the Minister of Mines and Minerals and the Conservation Board with respect to an experiment proposed by Richfield Oil Corporation involving an underground nuclear explosion beneath the McMurray oil sands with the objective of determining the feasibility of recovering the oil with the aid of the heat released from such an explosion; 55 pages.
- _____ (1960): Report to the Lieutenant Governor in Council with respect to the application of Great Canadian Oil Sands Limited under part VI A of the Oil and Gas Conservation Act; 81 pages.
- Pasternack, D. S. (1949): Report on operations at Bitumount during 1949; unpublished manuscript, Res. Coun. Alberta, Edmonton.
- Royal Commission on the Development of Northern Alberta, Report (1958): Govt. Alberta, Edmonton, 115 pages.
- Royalite Oil Company Limited (1958): Submission to the Royal Commission on energy re Athabasca bituminous sands; unpublished manuscript, 3 pages.
- Ward, S. H. and Clark, K. A. (1947): Examination of the possibilities of water-drive as a means of recovery of oil from Alberta bituminous sand; unpublished manuscript, Res. Coun. Alberta, Edmonton, 17 pages.

12. Government Regulations

Government of Alberta (1958): Regulations governing disposition of bituminous sand rights the property of the Crown under The Mines and Minerals Act; Department of Mines and Minerals office consolidation of Alberta regulation 333/57 and 195/58.

_____ (1961a): Regulations to amend the regulations governing the disposition of bituminous sands rights the property of the Crown; Alberta Regulation 12/61.

_____ (1961b): Regulations governing the disposition of oil sands rights the property of the Crown; Alberta Regulation 144/61.

13. News Reports

Adkins, W. E. (1948): New plant to process Athabasca oil sands; *Petroleum Eng.*, April 1948, Vol. 19, No. 7, p. 121-126.

_____ (1949): Oil sands demonstration plant; *World Petroleum*, Vol. 20, p. 40-45.

_____ (1950): Novel separation process unlocking Canada's oil sands; *Chem. Eng.*, Vol. 57, No. 3, p. 103-105.

Bell, R. (1908): The tar sands of the Athabasca River, Canada; *Mining World*, Vol. 28, p. 753.

Blair, S. M. (1952): Canada's oil industry; Neil Matheson McWharrie Lecture, Royal School of Arts, London, April 1952, 21 pages.

Canadian Chemical Processing Industries (1952): Canadian firms tackle Alberta oil sands; Vol. 36, No. 4, p. 10-12.

_____ (1952): How the economic "if" was taken out of the tar sands; Vol. 36, No. 4, p. 52-54.

Clark, K. A. (1945): Bituminous sands of Alberta; *Oil Weekly*, Vol. 118, No. 11, p. 46-51.

_____ (1948): The oil-sand separation plant at Bitumont; *Western Miner*, Vol. 21, No. 8, p. 131-134.

_____ (1951): New technique taps Athabasca tar sands; *World Oil*, Vol. 132, No. 2, p. 205-208.

_____ (1951): Commercial development feasible for Alberta's bituminous sands; *Can. Oil and Gas Ind.*, Vol. 4, No. 10, p. 25-29.

Davis, C. M. (1951): Athabasca oil, in situ recovery by electrovolatilization; *Can. Oil and Gas Ind.*, Vol. 3, No. 11, p. 54-55.

- Djinghamzian, L. E. (1951): Cold-water separation; *Oil in Canada*, Vol. 3, No. 51, p. 4486-4487.
- Ellison, A. H. (1957): Some operational notes for the McMurray area; *Jour. Alberta Soc. Petroleum Geol.*, Vol. 5, No. 5, p. 107-108.
- Ells, S. C. (1924): Extent and characteristics of northern Alberta bituminous sands; *Natl. Petroleum News*, Vol. 16, No. 15, p. 69-73.
- _____ (1924): Bituminous sands of northern Alberta; *Petroleum World*, Vol. 21, p. 152.
- _____ (1942): Research touches the north; *Can. Geog. Jour.*, p. 256-267.
- Gibbon, A. (1957): Is this the answer to the Athabasca tar sand riddle?; *World Oil*, Dec. 1957, p. 171-177.
- Hill, T. W. (1952): Electro-thermal recovery of petroleum; *Producers Monthly*, Vol. 16, No. 11, p. 14-20.
- Hodgson, G. W. (1952): The McMurray oil field; *Alberta Soc. Petroleum Geol., News Bull.*, Vol. 2, No. 3, p. 1-3.
- _____ (1959): Tar sands; *Petroleum Refiner*, Vol. 38, No. 1, p. 199-200.
- McMurray Asphaltum and Oil Limited (1924): Bituminous sand research by McMurray Asphaltum Oil Limited and Draper Manufacturing Company; *Can. Min. Jour.*, Vol. 45, p. 1270-1271.
- Montgomery, D. S. (1956): Our valuable research ally in Ottawa ... The Fuels Division; *Can. Oil and Gas Ind.*, Vol. 9, No. 1, p. 37-40.
- Ness, R. C. (1951): Results of oil sands project discussed by technical group; *Can. Oil and Gas Ind.*, Vol. 3, No. 1, Oct. 1951.
- Nickle, C. O. (1947): Dominion's liquid bitumen find of great importance; *Oil Weekly*, Vol. 124, No. 10, p. 23-27.
- Oil in Canada* (1959): Alberta okays oil sand explosion; Vol. 11, No. 47, p. 14-15.
- Oilweek* (1959a): Study committee finds no danger in sands A-blast; Vol. 10, No. 28, p. 20.

- _____ (1959b): Buried tar sand treasures still defy exploiters; Vol. 10, No. 28, p. 21-23.
- _____ (1959c): Alberta committee urges okay for oil sands A-blast; Vol. 10, No. 31, p. 18-19.
- _____ (1960): In situ combustion proposed for Athabasca; Vol. 11, No. 23, p. 13-14.
- Oil and Gas Journal (1960): Four-company team tackles Athabasca; Vol. 58, No. 3, p. 44-45.
- Pengelley, M. (1960): The enigma of Athabasca; Imperial Oil Review, April 1960, p. 15-18.
- Peterson, W. S. and Gishler, P. E. (1951): Oil from Alberta bituminous sands; Petroleum Eng., Vol. 239, No. 4, p. 66-74.
- Petroleum Week (1960): Mining and ore disposal complicate tar sands development; Petroleum Week, August 5, 1960, p. 20-21.
- Rowland, L. O. (1951): Major companies study processes for mining and treating Athabasca bituminous sands to produce good refinery charge stock; Oil in Canada, Vol. 3, No. 50, p. 4438.
- Rühl, W. (1952): Die Athabasca-oelsande-geologische technische und wirtschaftliche; Entwicklung Ver. Schweizerische Petroleum-Geologen u Ingenieure, Vol. 19, No. 57, p. 48-49.
- Tanner, N. E. (1952): The oil sands - waste or wealth?; Northwest Oil Jour., Vol. 1, p. 99.
- _____ (1951): Government policy regarding oil-sand leases and royalties; Proc. Athabasca Oil Sands Conf., Govt. Alberta, Edmonton, p. 169-182.
- Warren, T. E. (1951): Distribution of heat liberated from a well in bituminous sand; Oil in Canada, Vol. 3, No. 51, p. 4484.
- Waterman, H. I. and Brakel, A. (1952): Report on bituminous sand of Alberta; Ingenieur, Vol. 64, No. 8, p. 12-24.

