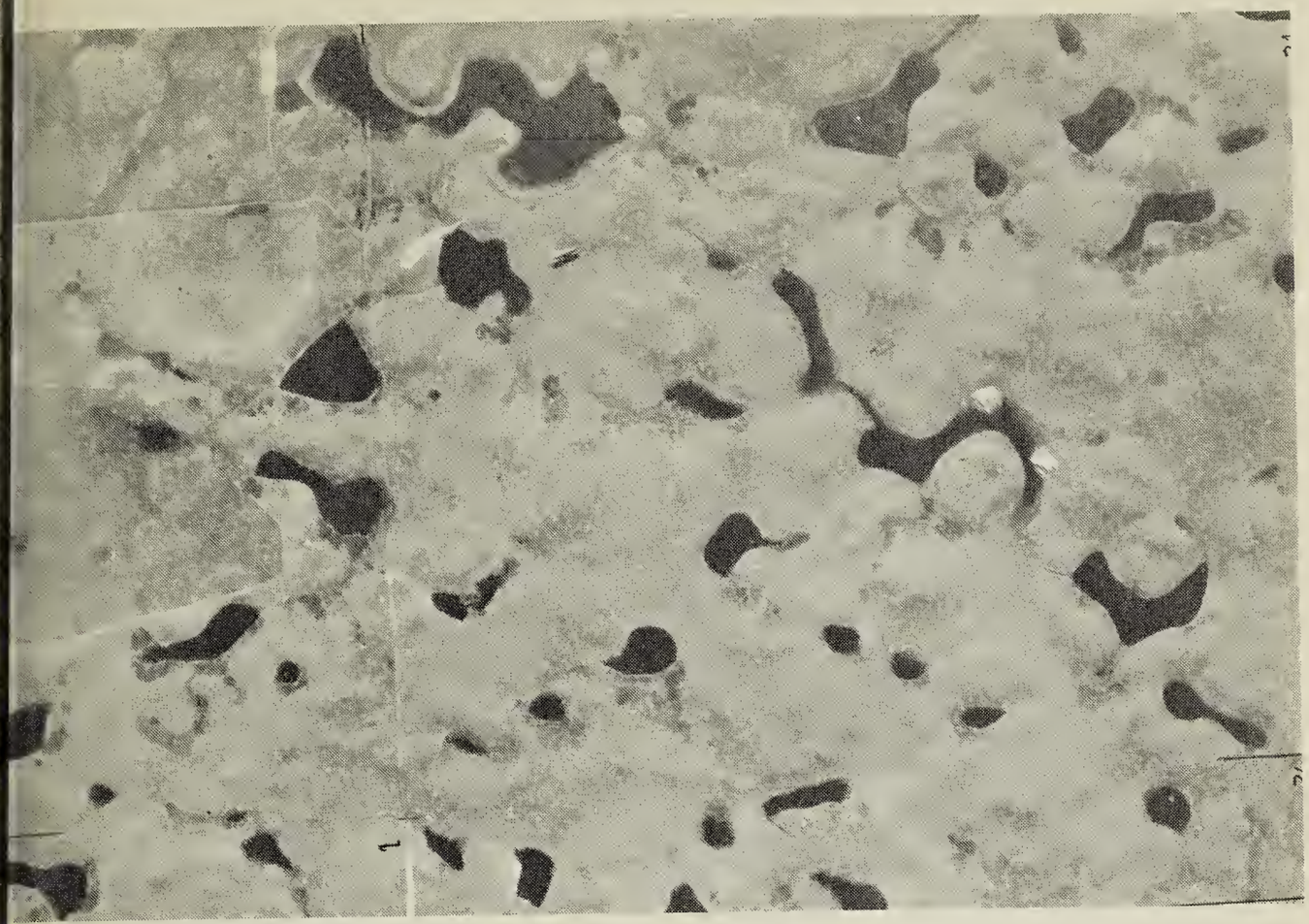
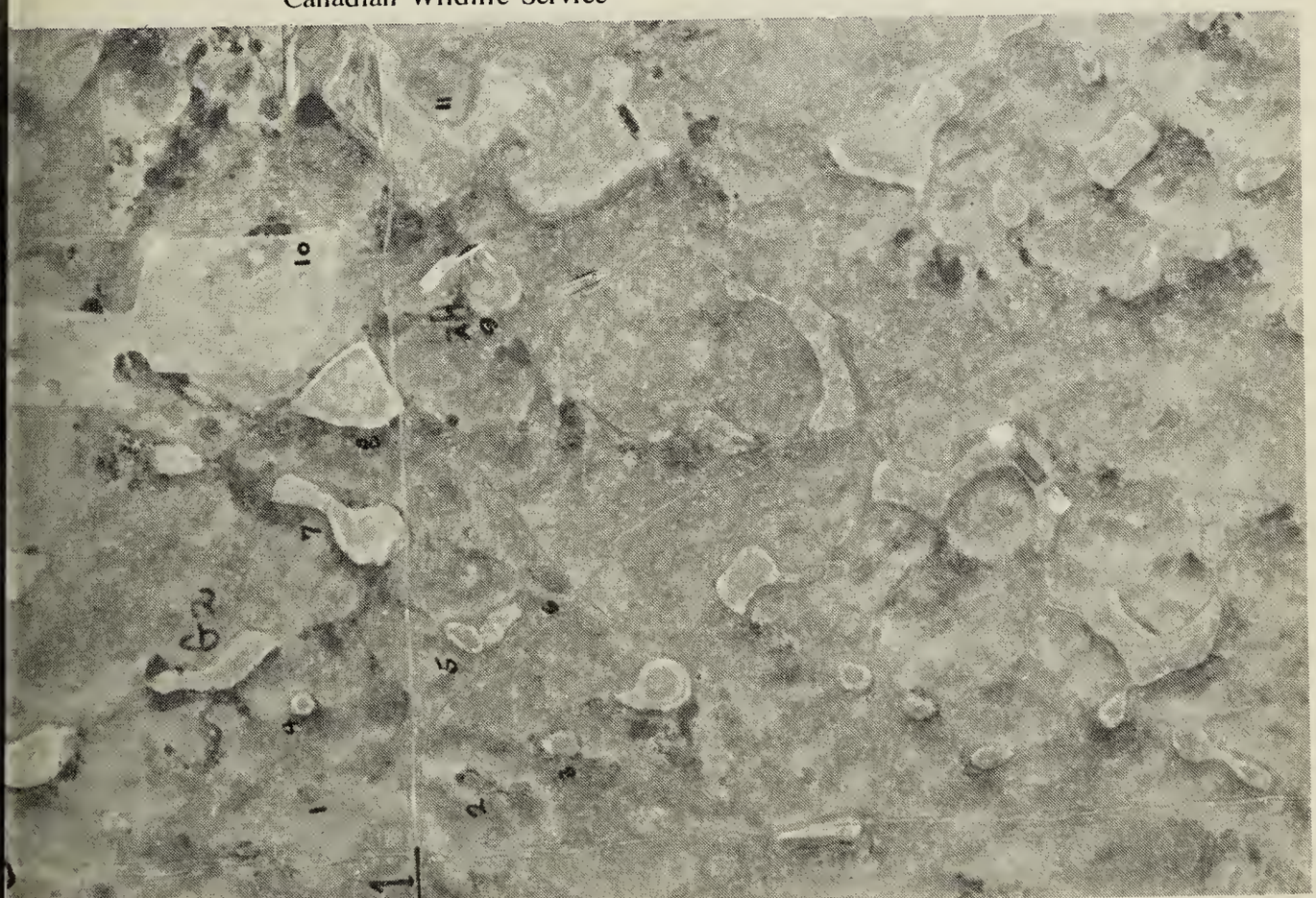


oughs full. Swift Current, May, 1965

WET YEARS — DRY YEARS

oughs dry. Same area, May, 1964
Canadian Wildlife Service



by THOMAS R. SMITH*

". . . a wharf had been built on Long Lake at the end of the completed portion of the railway.

But by the time the wharf was built a period of dry seasons had commenced, and the shore of the lake kept receding until the wharf was entirely on dry land.

That the drying up of the lake was not an extraordinary occurrence was shown by the fact that at the site of the wharf and well past the end of it, there were old buffalo trails and well worn Indian travois ruts plainly to be seen. This was good evidence that part of the lake had been dry in the past long before the wharf was built."[2]

Thus did P. Turner Bone, the civil engineer who located the railway from Craven to Saskatoon in 1889 explain the failure of the navigation aspect of the Qu'Appelle, Last Mountain and Saskatchewan Railway and Navigation Co.[2] The wharf at Craven had been unused from the date of its construction in 1883.

It is appropriate to consider the failure of attempts at steamship navigation on the Saskatchewan River during the period 1874 to 1889. Bruce Peel has documented the events in his book *Steamboats on the Saskatchewan*.[8] There were perhaps 3 years in this interval when navigation enjoyed some measure of success but the progressive effect of drought left some 50 miles of riverbed dry around the southwest side of Cumberland Lake by 1889.

An abortive attempt at hydro-electric power development at La Colle Falls by the City of Prince Albert owed its demise to an inadequate knowledge of rainfall and streamflow variation.[1]

The drought of the 1930's in Saskatchewan was disastrous for agriculture and business. It has been the writer's contention that similar disasters are likely to occur again and that pres water and land-use practices are m likely to aggravate than alleviate possible consequences.

Recent Annual Reports of t Saskatchewan Department Agriculture reveal an interesti departure from the original conce of the function of the Conservati and Development Branch. The 19 report enumerates projects which m be promoted:

"1. Erosion control projects.

2. Water Stabilization a Development projects for

(a) Irrigation
(b) Drainage
(c) Domestic purposes and I dustrial uses
(d) Watershed protection.

3. Pasture Land Reclamation.

4. Maintaining, designing and pla ting shelter belts, woodlots and tr growth for protection of land a drainage basins.

5. For the eradication of insect a weed infestations.

6. For the development of u derutilized areas.

7. For the reclamation of misus lands for whatever purposes they m be best suited."[10]

A study of the Annual Reports f the following 20 years shows how f the C & D Branch deviated from the commendable objectives. Drainag received major attention during t three wet seasons of 1953-1955, a again during the late 1960's wh federal government (A.R.D.A.) gran became available for C & D Branc administration.

Latest available statistics (1971-7 on accumulative spending by the C D Branch show a total of 11.5 millio dollars under the heading "Floo Control" (a euphemism for "drainage to qualify for A.R.D.A. assistance). Irrigation received less than one-ha

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this amount. When the Community sture programme came under C & D risdiction, clear-cutting of wooded b-marginal lands (with extreme fen- ng costs due to stones) accounted for large part of the 12 million dollars ent. It seems timely for an appraisal the consequences of two decades of veremphasis on large scale drainage, volving several million dollars of ublic monies, while erosion control, elter belts and wood lots receive ant attention.

Concern for inadequate water con- rvation and spring flooding due to ortsighted activity of the Conser- tion and Development Branch was utlined by the writer at the first Vetland's Project Advisory Commit- e hearing in Melfort in April, 1972. Mr. J. A. Wedgwood expressed the me concerns in the *Blue Jay* of ecember, 1972.[12] Widespread ooding along the Carrot River a few ays after the Melfort hearing may ave emphasized the hypocrisy of the rm "Flood Control". It is a common ccurrence for rapid snowmelt to be llowed by weeks or months of low recipitation as shown in the Carrot River Basin last year.

At this time (April, 1973) a year ter, farmers are worried about dried p wells and dugouts. Dugouts are sually filled by snowmelt and other- vise take exceptional rainfall to refill. Groundwater levels decline and ecover more slowly. Large road dit- hes and drainage schemes interfere with groundwater recharge. Ground- water has the greater potential for tabilizing rural water supplies and deserves more careful management.

Currently there is strong govern- ment pressure on farmers to increase livestock production. This diver- sification seems to be as dependent as navigation and hydro-electric power on a reliable daily source of water. Dryland grain farmers are capable of withstanding weeks or months of drought more successfully than the livestock producer who may find it necessary to market his animals prematurely when feed or water sup- plies are not sufficient.

There is great variability in our precipitation from year to year and seasonally. Compilers of data are inclined to average this information without further interpretation. Yearly averaging is only slightly improved when standard deviations or coef- ficients of variation are quoted. The simple bar chart has much to recom- mend it as a visual portrayal of monthly precipitation. Crop yields vary in relation to previous autumn rainfall as well as growing conditions.[3] Farmers have learned to employ sum- merfallowing as a means of insuring an adequate soil moisture level for crop production. Although there is new evidence that this may be poor practise from the point of view of soil management,[9] the concensus is that ad- ditional soil-stored moisture increases yields. Optimum rainfall amounts for wheat are 18 inches, for coarse grains 16 inches, rapeseed 25 inches.[6] For forage production the optimum moisture requirement is likely to be close to 25 inches. Yearly precipitation, including snowfall, is usually much less than these amounts.

It is not commonly realized that yearly precipitation for Estevan ex- ceeds that for Melfort or Prince Albert; nor that snowmelt losses are greater in the northern agricultural areas. Snowfall at Melfort is equated at 4.7 inches, rainfall at 11.37 inches; at Prince Albert 4.0 inches equivalent snowfall and 10.83 inches rainfall; while Estevan reports 4.4 inches equivalent snowfall and 11.96 inches rainfall. In view of such data it is dif- ficult to find justification for govern- ment sponsored drainage in areas like the Carrot River Basin. Drainage schemes in the "Land of Rape and Honey" seem destined to reduce available water to two-thirds that required for wheat and to less than half the optimum for rapeseed.

Snowfall accumulates unevenly due to drifting; this fact should be ex- ploited to allow runoff to be utilized for groundwater recharge. A good deal of soils and groundwater research has been done in Saskatchewan, but gov- ernment employees and farmers show little interest in it. Dugouts are sub-

Steamer Qu'Appelle docked at View Haven, Last Mountain Lake, Saskatchewan. July 4, 1909.
Archives of Saskatchew

sidized; however, wells are primarily the farmer's responsibility. Groundwater is better protected from contamination and evaporation and in many areas there is potential capacity sufficient to meet several successive years of drought. Surface water, however, must be admitted to the soil to maintain underground reservoirs.

Climate is said to be a combination of factors including precipitation, evapo-transpiration and temperature. Plants suffer heat-stress just as do animals and humans. The benefits of significant areas of trees can be seen by the rapeseed grower and the cattleman. Evapo-transpiration from native willows surrounding potholes may be the best possible way of dewatering these catch basins. These bluffs provide shade for cattle and local air conditioning for periods of excessive temperature. Evapo-transpiration is an overlooked factor in dry hot periods. Soils specialists, however, recognize it in the "Soil Moisture Efficiency Index".[7]

After drainage the soils in potholes usually differ in texture from the surrounding fields so that productio is only marginally increased. Assesso who are trained in soil capabili usually recognize this by leavi sloughs at a nominal evaluation $1.00 to $3.00 per acre. Some farme admit this fact, but justify draina mainly on the economics of field pa terns during operations.[5] (They ove look the inconvenience of ditches).

An examination of drainage costs revealed in Saskatchewan Departme of Agriculture Annual Reports, con monly shows estimates are exceede by up to 50%. The C & D Branc refers to a $136.00-per-acre cost justifiable basis for drainage.[4] The give no detailed evidence to suppo this figure nor for their contention th subsequent increased land assessmen pay for the reclaimed acreage. Th sort of economic logic was displayed the Wetlands hearings in Melfort. Fa mers promoting drainage should hav been required to submit their fiel assessment sheets and Wheat Boar Permit books in evidence. Instead the seem to have influenced the Commit tee by questionable data on farmin costs and alleged duck damage.

petition of drought conditions such experienced in the 1930's or 1883-98 periods will show wastage of owmelt to have been folly.

Precipitation data for Melfort 910-1971) shows 35 of these years th less than 16 inches and only 27 ars above this amount. Using 16 in-es as a dividing point for Prince bert (1885-1949), there were 36 ars below and 27 years above. One ight advance the argument that the lds favor dry years 4 to 3.

In conclusion, the farmer and con-rvationist must recognize their com-on problem is the intelligent storage f water for survival during the evitable and unpredictable dry ears.

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[11]SASKATCHEWAN DEPARTMENT OF AGRICULTURE. 1972. *67th Annual Report.* March 31, 1972. Queen's Printer, Regina, Sask. (p. 212, Table 1A).

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LOOKING AT SASKATCHEWAN'S FUTURE

The Saskatoon Environmental Society is arranging a meeting of people from all over the province interested in sketching out possible futures for Saskatchewan, determining the environmental, social and economic implications of these alternative futures, and beginning to plan strategies and activities which will help to bring about the sorts of environmental, social and economic futures they desire.

The meeting will be held at Camp Rayner, Lake Diefenbaker, on November 3 and 4, 1973. Persons interested in attending should contact T. H. J. Gilmour, 1614 Ruth Street East, Saskatoon S7J 0L8.