Report of Geological Survey of
Groups K26, K27, K28, K29, X30
by: Wallace R. Baker - May Ist to Oct 15th 2948
Supervised by P. C. Backland, registered Geological Ring.
Claime:
Group x26
GPX \#8, GPX \$9. GPX \#15 Mineral Claims
GPX \#15. GPX \#16, GPX \#17, GPX \#18 Fractional Mineral Claims.
Group X27
GPX, GPX $\ddagger 2$, GPX $\$ 7$ Mineral Claing
GFX \$2, GPX \$13, GFX \# 14 fractional mineral claims
Group K28
GPX *3, GPX *4, GPX \#5. GPX \#6 Mineral Claims
GPX ${ }^{1} 12$ Pr M.C. \& Keel Fr M.C.
Group 29
Phil No. 1. Phil \#2, Phil \#3. Phil \# 4 , Phil \#5, Phil * Fr. Mineral claims.
and Forth Wind M.C.
Group 30
King M.C. King 2 M.C.

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- (1) Rey Map
7f 2 2) Group K26
7/ 3 3) Group K27
7/4/4) Group K28
7/15 5) Group 129
$\neq 16$ 6) Group K 30


## Anmary and Conclnien

Rombland volcanic roek folded by forces from the west to form an syncline, about in the Eagle oreok valley have been intruded by two typee of Xeluon batholith rock. One was a quartz bearing rock, now found in the lower Sandy Creek basin. Tro phases of this rock are, a normal granite, (or quartz Monzonite) and a granite porphyry lying to the south and eparated from it by a narrow band of Rosslacd volcanic rock which contains one or more mineralized quartz Teins. The gecond type is a non quartz bearing granitic rock (syenite to diorito) intruded into Tagle ercek valley area. This intrusion is thought to be the latter of the two. Its contact with the Rossiand as soen in the Granite mines ouggest it may be a chonolith. Ividonces that it was rich in mineralizers are the metanorphoed contacte with flow rocks especialiy the eantern one. I-V quartz veins on its western side as contrasted with $\mathbb{N} \mathbf{- 8}$ veins in the eastern half ars not readily explained.

Between the two main bodies of Helson granitic rock lies a comparativoly narrow arn of senite to diorite rock, which broeden as it extend: to east. towarde the Venus and Athabesen mines. Though not connected on surface with lagie creek orystalling rock, it is gimilar in appearance but had blotite instead of hornblende as the mafic. It may be rolated. Some quartz veins are found in it and in the bordering voleantc rockn.

The difference in dip between the beds east and west of bandy Creok angeat a fault at that point.

## ENTREDUCHTOX

This repert deals with five groups of claims, recמrded as Group 430, X 26, K27. X28. K29, lying on the south slope of the Keotenay River between four and seren wilol west of the City of Fiolson. The claine in each group are as followit
 Torth Wini XC
$X 30$ King $K C$ King 2 NC
 Keel Pr MC.
 Ir MC and Win Yr Mining Olain

They occupy parts of ralleys of Sandy and Figie areoks. Jumber operationt in this area have left low tands of mature forest and young second growth hemlock covers most 01 the area. 01d Legging and mining roads extend to the hoad watore of the creeke, making the area very accesable. The urvey vas undertaken to detoryine the coenomic posetibilities of the claime held by Eenville Gold Mine Itd. and to obtain a banis for deterndinig the nature and oxtent of future work in thit area. The work consisted of inding all outcropt, making a geolegteal map, suggesting probable pictare of the geelegy of the preperty. Some treaching was undertaken at izportant points and all quartz veins and mincralized cutcrops were mampled and samples assayed.

Clalm boundaries were cut where this had not already been done. These boundarien were then taked at hundred foot intervaly with the ald of chain and clinometer. Traverses were then made, by pace and compass at one hundred, one handred and fifty and two hundred foot intervals acress the claims, depending on the nature of the cover, visibility and relief. When outerope were encountered the traverse wat continued by ohain and compass to the nearest boundery stice. Transit eurveys were ndertaken to map the adite on King M.C., KIng 2 M.C., and the working on North Wind M.C. The writer was very ably assieted by Chester Miliar and stanley Eogaon, Science students of the Unirersity of British Columbla, sni by Wh. Johnson. The writer also appreciated the helpiul diecasaion with Dr. Little of the C.G.S., now working in the arez.

The writer proposes to describe the geology of the individual groups and, under separate heading, to dencribe the features comon to the area.

## GHoganPrix

The relief and drainage of the area in which lie the groupe of elaing being covered in this report is show on the accompanying key map. This is an onlargement of a map applied by the Canadian Geological Survey.

The C.G.S. map was made from air photographs on a soale of one half mile to the inch. Wo have enlarged the map by means of a pantograph to a acale of one quarter inch to the mile, and drawn in the four groupe of claime on which this season's work was done. Elevations extend from twentyfive handred to five thougand eight hondred feet on the claims. Drainage is to the north into the Xootenay River. The three 1mportant otreams are Sandy Creek, Fagle Creek and Forty-nine Creek. Although the relief gives fairly steep side hills, outcropa are in general rare, bedrock being covered by a lalrly heavy overburden ranging in th1ckness from a fow to twenty or more feet. Bedrock exposures occur generally in the steep sides of the creek beds, where the relief becomes greater than the angle of repose; and on the tops of the ridges which have been in placen cleared to bedrock by glaciation or weather. Another source of bedrock information is provided by the work of the early prospectors who did a tremondous amount of aluicing and trenching. Although most of these cate have beon partially refilled, some bedrock and many dump remain exposed.

## Straticraphy and Piteraraphy Areake

Flov rocks of undetermined thicknens once covered
this area. Those lavas vary in color from soft green to almost black and in texture and structure from amorphas to porphyry, with fine grained matrix.

They have beon named Rossland. Intruded into these flow rocke are bodies of platonic rocks, arme of the Nelson aranite extending to the south, from the paront body to the North. There are three phases of this plutonic rock casily distinguishable beside some metomorphased contact sones. One phase, a granitic rock is seen on the Iing MC of Group 30. It is quarts bearing and hornblende in the ohief malic. The second phase lien in the Fagle Creek basin. It in a modium grained diorite with no visible quartz and with somewhat altered amphibolef. It is aeen outting through group x28. A third phase is oncountered on Xing 2 MC. It is a porphyritic variety of granite with large (to one inch) feldopar erystalls prominentiy dieplayed. The thickness of the Rossiand Lavag was not deterninable due to the inmited nature of the aurrey. However from Sandy Creak vest to the diorite on group X 26 the flow rocks with a plan width of $2500^{\prime}$ and a dip to the weat of $50^{\circ}$ indicates $2150^{\circ}$ feet. But mach of the several thousand feet of rocks which overlay the Hel son granite during its formetion may well have been the Rossland rolcanios.

The granitic rocica have been thought of at the tops or cupolas of an undor-lyling batholith. However a Iosslandcranite contact in the granite mine dipu (450) forty-five degreen to the west, suggesting that that parilcular body of diorlte may have the form of a chonolith. This viev would considerable alter the present theory of the origin of the ore bodies in that arat.

Descriptions of diken a voin will be taken up in the discusaions of the groups in which they occur. The Phil_ apenp (Gromp_K_29)

The Phil Group, is situated on the vell rounded hill between Ragle \& 49 creeks and lie between contours 3700 \& 4300 as shown on the Xey map. Rock exposures are beut seen on the Forth Mind Claim which lies on the oreat, and in the bed of a seasonal stream outting the west slope of Phil \$2 HM.C.

Thirty outcrops on these olaim vere looated and exaninod and many outcropg behind the clatms lines but pertin ent to the seological pieture of the group were examined and mapped. The greater part of these claimes are underlain oy s phase of the Helson granite.

One occorrance of Rossland rock vas mapped on Phil *2 Ir M.C. near 49 Creek road. Outeropa along 49 Creek and tronohing on the Fazel claimg to the South of the Fhil group cive ue approximately the location of the contact with the Welson granite on the Pall groap and a alue to opecification of the laval covered by overburdon on group $\mathbf{X}$ 29.

Megascopis examination of the Holson granite, which appears to be uniform within the group boundaries, showed the followingt groy to pinkioh color; coarnoly ( 8 mm ) eryetalines mo quartz is viaible. Peldopar are glagiy white and aroam colored, abaut $50 \%$ acid feldspars. The dark mineral is horm blende.

The roleanic rock seen at the south ond of phil \$2 Ir MC had a daric green fine grained natrix in which a fow joorly formed erystal of largor aise ( 3 m ) are seen. Other phanes of the Rossland Volcanies vere noted on the 49 Creek road and mapped. Variations are frequent and distinguishable phases occapy from a fow inches to many feet of the exposures.

One Phase distinctly porphyritic extende from statLons 28-00 for 30'. Data sufficiont to calculate the stratographic thickness the Roseland flow was not avallable.

4 lanprophyic dike wan oncountered on Phil \$7. The outcrop was large, about oight foet in diameter. Indicatione of its atrike were lacking. It was a black rock with large ( 12 mm ) vell developed exystals of brown biotite. One other dike of rock, indistinguishable, from this, is uncovered on the Forth Wind M.C. where it cute the quarts vein.

A quartz vein is exposed on the Horth Wind M.C. It 1s a milky quarts with varying amounte of anphides of sinc, lead, iron * coppor. Irenching has exposed this voin at the cast end as 0.5 feot wide and dipping $59^{\circ}$ to the south. at the weat ond the rein is about $2 \frac{1}{2}$ feet wide. The arerage strike neems to be about 1800 m . Gooloste Structive

The intruaive rock is directly comneeted with the Helson granite Morth of Xootenay piver and torminates a fow thousand feet south of the olais. It may be a cupola from a submerged batholith or a chonolith from the main body to the north.

As the contact is not een, contact phonomena can only be Inforred. They seen to have little effect on the creanstone as observed on 49 oreek road. There is an outerop of gneisaic granite just above the point where the contact is thought to zaen through the 49 ereek road, (not in the map area) indicating some contact metonorphien. It is clearly bended with ifght and dark sinerale indicating some digestion of the Rossland rocks along the contact.

The rein exposed on the North Wind M.C. Etrike II 80 I and hat a dip to south of about $65^{\circ}$.

The exposed lamprophyre dike atrikes $\mathbf{1} 29$.
The wost prominent fault in this ares is exposed in the intracle workinge where a chear yene about $5^{\prime}$ wide striking $75^{\circ} \mathrm{I}$ : dipe $45^{\circ}$ \%. A mineralised quartz vein is seen In this shear. An ansuecessful attempt vas made to find this fault within the clain boundaries. Grenp $\times 30$ (The King Oromp)

This group is on the cast side of sandy Creck 1500 feet gouth of grasite Zoad. It risen to the south giving a difference in relief of about 800 feet. Hote exposures are seen along the west boundary where sandy Creek has cut down through the glacial till and a short distance into bed rook (about 50 foet). There are also some oxposure on the eant boundary wisch is on the crest of a hill. The claime are almost antirely covered with glacial debris in the form of termanal mornines.

## Petrongraphy

twanty-ilve outcropi ware located and mapped. The Exes 19 uncerlein with the granitic rock of the Kelmon Batholith, two phases belng prominent. On the mouth helf of Kind 2 M.C. is seen a phase of Tolson granite eharacterized by large (to one inch) Ioldspar orystals. The ground mast of the porphyry gonsiste of m medina to aourse grained orytelline rock of the falloulng compositiont Quartz as clasey nobs up to 8 min aise and comprising of $15 \%$ of the rock. The foldspary are glasy to white to oream. The large phenocrynte are light colored and appear to be closa to the rectangular forz. The dark mineral is harnblonde.

The granite on the northern part of the group is medium to ourse grained and very similar to the matrix of the porphyry deseribed abore.
 of King 2 M.C. It is a dark green, vagnely crystalifne flow which is thought to have the componition of dacite. In the North cornar it is exposed by one onterop, and four tronches which wore out to expose a quarts voin. The dimonsions and attitude could not be determined. However, if we assume the attitude to be sindlar to the exponare of Mosiland on the west corner: the width is sbout two hualred feet. The exponure at the watt corner of the claim ia been on the went bank of the stream, Its benmariet are not exposed but
judging from the pesition of the two adits on the east bank, the width is between $100^{\circ}$ and $200^{\prime}$. It also containe a querte vein verying from $1^{\prime \prime} 405^{\prime}$ wide, of white erystalline. quartz, Elightly mineralied and with an attitude of $34^{\circ}$ : $66^{\circ}$ s.W. It is posible the two outcrops are parts of the same body. The quarty vein in the North oorner was not ceen but judging from the collection of quarts on the dump it is at leapt as large as the one to the vest.

Tho hundred and fifty feet s-W of the Mossland ontoroy there is exposed in the oreek bed on both banks, a lamprophye dike which striken 12 要 and dips $77^{\circ}$ to the south. It is $2.5^{1}$ wide and is bordered on the north by a 1ight colored syinite dike followed by another dike of dark grey fine grained rock.
the joint pattern dimplayed by granite onterop at
 65W: 773W: 50N. There is quarte Tein material in the fracture IT3W which has a shoar sone about an inch wile. Displacem mont of a one inch pegmatite dike shows Pault (II35) as a reverse fauls. She quartz vein how open pace fillims and thus normal fanlting.

## Gromp 28

Tht group it underlain by three bande of rocks with contacte ftriking botween I E W. A band of Mossland rolcanics cuts the North eant lide of apX Wo 12 If M.C. trixing $72^{\circ}$. The contact in not seen but good exponures of 120 F rooks and
 feet of each other. thereby defining the contact.

From the way the plan of the assumed contact demoribee a curre concave to the north acrone the depression oi sandy creak, it is thought that the contact dips to the south vest as in the granite mine. The wiath of the body of Rossland has not been determined. However its $I$ contact with the granite is seen on Granite Hoad and its position noar the Dezter fraction has been located approximately. Proaucing thia line acrogs Sendy Creak at the mill aite, a point indicated by the topography as the possible contact, gives a probable width of 1500 seet.

Strategraphicaily the flow beds have a small dip to west. Thickness is not determinable.

The Robsiand rocke in this area are typioally dark green and vaguely orgwtailine to amorphous flow rocks. There are spote of light colored felepars abont 2 and ande better formed pyroxene crystals of the same size. Its composition appears to be near a basic dacite.

Bordering the Rossland on the worth is a band of Helson rock about 500 feet nde at the eastern boundary which extend., es a narrowing arm to the $I M$ and terminating in the Golden Fagle MC. The rook of this phase of the Xelson Eatholith is medium grained, vell formed cryetall. Quartm was not seen. The iight colored feldspara form a mat into which the dark minarals, Honty monbzande ent. Other felmpar Lathe are Gistinct. The mafie is Brown biotite.

Af this body of rock about Monyonite in couposition Is not comnected by onterops to the morth itt imandiate source is in doubt. It differs in its oompostion from the bodien of Ieleon to the sast in beling non quartsmbearizg. It differs from the diorite to the vent in ite mafic content. A later phase frow the aame nouree as the Fagle oreek diorite seeme the most probable explanation.

The quartz veins seon on the main outcrop are very 1rregular and the strikes and dipe hown on the sap are an ostimated everage.

The vain sean on the aant side of the outorop is in a fanlt with shear zone of about 0.8 feet with atrike and dip as indicated on the map. (y60N.55 ${ }^{\circ} \mathrm{s}$ ).

To the south went, the granitic body, flow rocke eover the remainder of the group, except the 1 eorner of ogX3 M.C. where the outcreps do not give a clear picture. DDH $\$ 99$ intersecte a few fingers of rock which has beon louged as Diorite. The many outcrop: of thit rock may indicate these Ingert are more numerous to the I.

The flow rock is typical Reasland of medium to dark Greon, amorphus to vagnely orystailine.

Black al cone-lamprophyse dikes appear on GPX Yos, 3 s 4 with an apparont strike of w6m. Zxposed width is about 214.

To folding is apparent and beds where een have a vesterly dip of 500 and are atrixdng $30 \%$.

Faulte with various width of shear zone wore mapped an striting II $22^{\circ} \mathrm{V}$ and dipping $75^{\circ} \mathrm{W}$ and $55^{\circ}$ \%. This would indicate the causal force as a resultant pressure from the vest normal to plane atrilding $Y 20 \mathrm{Y}$ and dipping 300 ant. The faul mast have occurred at a time when the beda were less competent than they now appear to be.

Group I 26 consisting of the three minoral claims and five fractional mineral olaim lying astride the gandy Creek basin. Thevation are between the 3000 and the 5000 contours. Jinponures aro numorous, serenty being mapped within the boundries and a fow outaide thom.

On Group I 26, an arm of the Felson granitie rock previonsly described in $X 28$ undoriles the north east portion of GPX 18 Pr MC. To the vest of this body, the claime are underiain with Roseland volcanics as far as the Win Mr M.C. under which is found another phase of the Feison granite.

The phase of the Helson batholith found on GPX 17 and 18 Fr M.C. is a light grey mediun orystalilne rock. Quartit is not visible and the foldepar composition at mongonite to diorite. It is well exposed in a strean bed in GPX Yy MC where its charp sontact with the greenetone to the south is easily meen. Other points of contact are eeen to the IN as mappod. Although there is a considerable gap between this outcrop and those on GPX \$12. because of the sindlarity of the rock we are ascunige them to be the name body.

The Rowsland flowe found to south west, are for the most part typical an deacribed above. The variations noted are the exposures on GIX 15 Mr M.C. which have becone a light color on weathered surfaces; the bluff, on Sandy Crecic on GFX 8 M.C. are distinotly banded by thin layer: of 4 termating light and dark layors. It is here that the attitude of the flowi is best seen. Hear the vestern edge the Rostland rock becomes altered, moaked and dioritized as it merm gen into the crystalline rocke ceon on Win Tr M.O.

A poesible explanation is that the intrusive recks were rich in mineralisers.

The contact hore is roughiy I $10^{\circ} V_{0}$ and in plan is an undulating line poseibly due to dieplacement by faulting but more ifkely due to the dipping contact meeting an un oven topography.

The phase of platonic rook seen on the Win Mr M.O. clain is a dull to dark grey, and medium to coarsely cry stadiline. Mo quarty is soen and the feldapars are dark groy. The dark mineral appear: to be an altored pyroxene and constitates about 258 of the rock. The rock appears to be adorite. One fault in acen otribling 1 22li and dipping $80^{\circ}$ casteriz. 8ome quartz vein material in the 5 lich intar sone (mapped). small veinlete of quarts are ssen in the diorito and greenctone on GPY $\$ 18$ Fr K.C.

A 3 inch quarte veln was seen in the Rossiand onterop on OPX 15 Ir otrixing N 50 vid dipping routhoriy.

Gromp X 27 in Atuated as indicated on the Key map on the crest between Sandy * Hethe Crek. It comprises 3 mineral claims and three fraotional mineral clajne as listed in 1ntroduction.

GPX MC \& GPX 2 MC are underlain by Hossland Now rocks. typical of the lavas described above.

The contact with the diorito to the west is an irregular inc about In-B on the wpit side of GXX \& OPX2 Mining claind.
the rook lying to the west is the altered diorite as dascribed above for 100 to 1000 feet and grades into a light grey diorito with modiun sized vell formed orystals. The foldepars are light grey to glasey with many lathe how ing. The mafies are homblende and constitute about $30 \%$ of the rock. Marrow quarte velne are noted in two places as mapped, in the Bossland.

Three favits were seen and mapped, one was exponid by a pit on western sip of aPX 2 \%r. It struck In-8 and was vertical. The mear was marked with copper atain. the second val seen on the asme clain on a pit at the south ond. It striken 465 and dipe $10^{\circ}$ to the Forth. Athixd fanlt is in the greanitone at the $M$ and of the mave claim, etriking M20I and dipping $38^{\circ}$ to the west.

The Rosaland in the middle of GPX 14 Mr M.C. Might be explained an a sail rominent of a roof pendent, or as one cape of an embayment and in tenatively mapped as the latter.

## Smanysind Conclutions

Gealogt cal Structure - Regional,
The Roseland flow rook extending ncreth, to the Xoetenay rivar and in places a little boyond warn folded by a force acting from west, which produced a syoline with axia spproximately in the Eagio oreek basin. Striking about $15^{\circ}$ west of south and with axis planging to the south and axial plane inclined to the liat.

Intruded into these how are three bodies of the Helson granitic rocks. One occupied what is now the Fagle creek bawin and the territery to the west of it, for maxImam width of about two wies and extending south about three miles. It contget on the east with the Rossland volcanice is said to dip wast at $45^{\circ}$ (granito mine). This tuggesta that the body may be a ohonolith. Its contact along the east boundary of Win Iy indicates the contact dip Rast.

The second body of Melson rock intruded it the Roseland occupies the jowor valley of sandy and extenda neveral miles to the east. Being quarts bearing it is thought to be the earlier. It is a quartz mononite.

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18 \\
-26
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There are two distinct phases - one, a normal mom ronite, the other a porphyry, 4 narrow body of crystalline rock lies between these. It resembles the diorites to the vest sis it hat no quartz, but it appears to have come in from the eat.

A difference in dip between the flows cast and west of Sandy creek basin suggest a a pandit at this point.







