THE HISTORICAL BACKGROUND OF THE
AJO, ARIZONA, SCHOOL SYSTEM

by

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University of Arizona

1945

Approved:                      Date

Director of Thesis
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Ajo High, in the center of one of the important mining districts in Arizona.
INTRODUCTION

In western United States between the Rockies and the Sierra Nevada is located a great mineral belt, as yet far from exhausted. Zinc, mercury, gold, silver, molybdenum, magnesium, and copper are a few of the ores found in this belt. It is as a producer of the last-named but all-important copper that Arizona has gained fame.

In the southwestern part of Arizona in Pima County within this mineral belt lies the city of Ajo, a typical "copper city." It has a thoroughly modern, up-to-date school system.

Though mining was begun in this section by 1850, it was not until 1912 that any attempt was made to provide even the meagre beginnings of schooling. To understand this seemingly inexcusable lack of civic pride and indifference to the education of residents, one must know something of the development of this mining community.

It is the purpose of this study to trace the historical background of the Ajo schools, and to show how gradually the germ of the necessity for education developed during the formation period of this frontier camp, town, and city, and finally bore fruit in the present school system.
To present the picture as clearly as possible, a history of the town is given by periods: earliest beginnings to 1856; 1857-1899; 1900-1907; 1908-1917; 1918-1942.
CHAPTER I

THE MODERN SCHOOL SYSTEM

Although Ajo has been allotted two districts, No. 15 for the elementary grades and No. 3 for high school, the town's school system is all located at one place and most of the classes are held in a main building which was dedicated January 5, 1940. The site was donated by the New Cornelia Copper Company, and the building financed through bonds which it bought. In providing Ajo's children with educational facilities, the mining company was very generous. More than $175,000 was spent for the original building and furnishings; later additions and improvements, of course, have increased this amount considerably until for 1942-43 the assessed value of land, buildings, and equipment was $388,730.

There are two administrative officials: the principal, who supervises grades 7-12; and the superintendent, who has general charge of grades 1-6 in addition to his duties as head of the two school districts. Control of the school is in the hands of a board of three members, each serving

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for three years, elected by the people. For grades 1-8 all equipment is provided from county and state funds; local taxes supply the high school and kindergarten. The educational program at Ajo ranks with the best systems in the state, and the high school is a member of the North Central Association of Colleges and Secondary Schools.

The main building is rectangular in shape, of the Spanish mission type of architecture, two stories high, built of stuccoed concrete and hollow tile with tile roof and cement floors. In addition to the heating system and supply rooms, the basement contains the domestic-science and manual-training departments, a mathematics room, a dark room, the cafeteria, and a health-service room. On the first floor are located six classrooms, four lavatories, a waiting room for parents or other visitors, the superintendent's office, and the auditorium. This latter has a seating capacity of 600, and is so arranged that it can be used for theatricals, dances, or for outdoor performances.

On the second or top floor are located the principal's office, the library which is open to the community as well as to students, a study hall, and classrooms for high-school students. Beginning with the year 1944-45 the library and study hall were combined. Behind the main building are the gymnasium, built in 1937, and a shop building constructed in 1926.
Every effort has been made not only to give Ajo's school children pleasant quarters, but also to equip them with every convenience and protection. Inflammables such as paints or polishing materials are kept in a small metal building separate from the other buildings on the grounds; in addition to a full-time janitor and one part-time assistant, eight high-school boys are paid to help keep the facilities clean and sanitary. Water and light are drawn from the town's plants, as is also the gas for the school's central heating system. A county health nurse conducts periodic examinations, and is available for emergencies at the school. The buildings are constructed so that there is cross-ventilation throughout, except in the gymnasium where a blower system keeps the air fresh.

Among the modern devices and aids which make education more interesting both to teachers and students are a 16 mm. sound-moving picture machine, portable bulletin boards, a generous supply of maps and globes, a library of approximately 3,000 volumes, up-to-date equipment in shop and domestic-science rooms, fine gymnasium apparatus in addition to a basketball court and football field. The school does not have its own swimming pool, but uses the one operated by the city.

During the school year 1942-43, twenty-five full-time and four part-time teachers were employed for elementary
grades, while in the high school there were six full-time and four part-time teachers. Four of this total of thirty-nine have duties in both the elementary and high-school grades. Of the thirty-one full-time teachers, twenty-five have the A.B. degree and one the master's. The five without degrees are elementary-grade teachers, and all have at least three years of college training. It is likely each of these five has had a long tenure in the Ajo system, since in 1934 the requirement was enforced that all new elementary teachers should possess the A.B. degree and all incoming high-school instructors an M.A. or its equivalent. Both the superintendent and principal have the master's degree. Thus it would appear the teachers and administrators are adequately trained for their educational responsibilities.

The majority of Ajo's working people are employed at the mine, and many of them stay in one place only briefly. This obviously reacts on the school attendance. For example, eighty-nine elementary-grade children and seventeen high-school pupils left the district in 1941-42. Table I shows the trend of enrollment through the years 1936-1944.

Complete annual figures for high-school enrollment were not available; but in 1941-42 of the 1,189 enrolled in the

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2. Annual Report of Ajo School Districts #15 and #3 to County School Superintendent for School Year 1942-43, Table I-1.
TABLE I

SCHOOL ATTENDANCE 1936-1944

<table>
<thead>
<tr>
<th>School Year</th>
<th>Enrollment in Elementary School</th>
<th>Avg. Daily Attendance Elem.</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1936-37</td>
<td>739</td>
<td>687</td>
<td>130</td>
</tr>
<tr>
<td>1937-38</td>
<td>826</td>
<td>715</td>
<td>145</td>
</tr>
<tr>
<td>1938-39</td>
<td>801</td>
<td>764</td>
<td>150</td>
</tr>
<tr>
<td>1939-40</td>
<td>790</td>
<td>747</td>
<td>166</td>
</tr>
<tr>
<td>1940-41</td>
<td>897</td>
<td>732</td>
<td>178</td>
</tr>
<tr>
<td>1941-42</td>
<td>956</td>
<td>819</td>
<td>192</td>
</tr>
<tr>
<td>1942-43</td>
<td>979</td>
<td>798</td>
<td>170</td>
</tr>
<tr>
<td>1943-44</td>
<td>937</td>
<td>737</td>
<td>157</td>
</tr>
</tbody>
</table>

entire school system 341 were Mexican, 118 Indian, 3 Negro, and 727 American. It would be interesting to know the proportion in which these various nationalities account for the difference between enrollment and average daily attendance figures for the elementary grades.

Ajo teachers carry a normal amount of work. In elementary grades for 1943-44 the pupil-teaching load was 33.33, and in high school 22.36. Eight of the high-school

3. Annual Report of Ajo School Districts #15 and #3 to County School Superintendent for School Year 1941-42, Table 10.
instructors had less than five classes a day, three were responsible for five, and only one handled six classes.

Table II shows that salaries paid have been in proportion to economic conditions, decreasing during the depression years 1933-37 and increasing since that time. To meet higher living costs under war-time conditions, $100 was added to each teacher's annual salary in 1942, $135 in 1943, and $115 for the year 1944-45.

Since teachers are paid on a twelve-month basis, Table III gives a more specific picture of incomes.

The salary schedule, adopted in 1938-39, is figured on a base pay of $1,215 for elementary and $1,512 for high-school teachers, plus allowance for years of education and teaching experience. The amount added by each year of experience for a person having four years of college is shown in Table IV.
<table>
<thead>
<tr>
<th>School Year</th>
<th>Elementary</th>
<th>Grammar</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929-30</td>
<td>$195</td>
<td>$195</td>
<td>$225</td>
</tr>
<tr>
<td>1930-31</td>
<td>195</td>
<td>195</td>
<td>225</td>
</tr>
<tr>
<td>1931-32</td>
<td>189</td>
<td>155</td>
<td>225</td>
</tr>
<tr>
<td>1932-33</td>
<td>189</td>
<td>155</td>
<td>203</td>
</tr>
<tr>
<td>1933-34</td>
<td>165</td>
<td>165</td>
<td>203</td>
</tr>
<tr>
<td>1934-35</td>
<td>150</td>
<td>175</td>
<td>200</td>
</tr>
<tr>
<td>1935-36</td>
<td>150</td>
<td>175</td>
<td>200</td>
</tr>
<tr>
<td>1936-37</td>
<td>150</td>
<td>190</td>
<td>200</td>
</tr>
<tr>
<td>1937-38</td>
<td>170</td>
<td>210</td>
<td>220</td>
</tr>
<tr>
<td>1938-39</td>
<td>179</td>
<td>181</td>
<td>225</td>
</tr>
<tr>
<td>1939-40</td>
<td>183</td>
<td>185</td>
<td>230</td>
</tr>
<tr>
<td>1940-41</td>
<td>191</td>
<td>196</td>
<td>230</td>
</tr>
<tr>
<td>1941-42</td>
<td>197</td>
<td>193</td>
<td>230</td>
</tr>
<tr>
<td>1942-43</td>
<td>208</td>
<td>207</td>
<td>241</td>
</tr>
</tbody>
</table>

These figures are on 9, 9, and 9\frac{1}{2} months for elementary, grammar, and high school respectively.

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4. Ajo Public Schools, Miscellaneous Data, June, 1942, p. 4.
### TABLE III

MONTHLY SALARIES ON A TWELVE-MONTH BASIS
FOR THE YEAR 1941-42

<table>
<thead>
<tr>
<th>No. of Teachers</th>
<th>Elementary &amp; Grammar</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary per Month</td>
<td>Salary per Year</td>
</tr>
<tr>
<td>2</td>
<td>$101.25</td>
<td>$1,215</td>
</tr>
<tr>
<td>3</td>
<td>$105.17</td>
<td>$1,262</td>
</tr>
<tr>
<td>1</td>
<td>$109.58</td>
<td>$1,315</td>
</tr>
<tr>
<td>1</td>
<td>$112.50</td>
<td>$1,350</td>
</tr>
<tr>
<td>1</td>
<td>$115.50</td>
<td>$1,386</td>
</tr>
<tr>
<td>1</td>
<td>$116.17</td>
<td>$1,394</td>
</tr>
<tr>
<td>1</td>
<td>$118.50</td>
<td>$1,422</td>
</tr>
<tr>
<td>1</td>
<td>$122.25</td>
<td>$1,467</td>
</tr>
<tr>
<td>1</td>
<td>$122.75</td>
<td>$1,473</td>
</tr>
<tr>
<td>1</td>
<td>$125.00</td>
<td>$1,500</td>
</tr>
<tr>
<td>1</td>
<td>$126.33</td>
<td>$1,516</td>
</tr>
<tr>
<td>1</td>
<td>$127.08</td>
<td>$1,525</td>
</tr>
<tr>
<td>3</td>
<td>$129.58</td>
<td>$1,555</td>
</tr>
<tr>
<td>1</td>
<td>$134.67</td>
<td>$1,616</td>
</tr>
<tr>
<td>1</td>
<td>$137.17</td>
<td>$1,646</td>
</tr>
<tr>
<td>1</td>
<td>$143.67</td>
<td>$1,724</td>
</tr>
<tr>
<td>1</td>
<td>$144.33</td>
<td>$1,738</td>
</tr>
<tr>
<td>3</td>
<td>$147.83</td>
<td>$1,774</td>
</tr>
</tbody>
</table>

Avg. $126.14 $1,513.89 $156.28 $1,875.33

Principal $2,600
Superintendent $4,800

---

5. Ajo Public Schools, Miscellaneous Data, June, 1942, p. 3.
TABLE IV
SALARIES 1943-44 SHOWING ALLOWANCE FOR YEARS OF EXPERIENCE

<table>
<thead>
<tr>
<th>Year of Experience</th>
<th>Elementary</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>$1,565</td>
<td>$1,687</td>
</tr>
<tr>
<td>2nd</td>
<td>1,612</td>
<td>1,734</td>
</tr>
<tr>
<td>3rd</td>
<td>1,656</td>
<td>1,778</td>
</tr>
<tr>
<td>4th</td>
<td>1,700</td>
<td>1,822</td>
</tr>
<tr>
<td>5th</td>
<td>1,744</td>
<td>1,866</td>
</tr>
<tr>
<td>6th</td>
<td>1,787</td>
<td>1,909</td>
</tr>
<tr>
<td>7th</td>
<td>1,831</td>
<td>1,953</td>
</tr>
<tr>
<td>8th</td>
<td>1,875</td>
<td>1,997</td>
</tr>
<tr>
<td>9th</td>
<td>1,919</td>
<td>2,041</td>
</tr>
<tr>
<td>10th</td>
<td>1,962</td>
<td>2,084</td>
</tr>
<tr>
<td>11th</td>
<td>2,010</td>
<td>2,132</td>
</tr>
<tr>
<td>12th</td>
<td>2,058</td>
<td>2,180</td>
</tr>
</tbody>
</table>

The curriculum of and requirements for graduation from the Ajo High School follow closely those of other Arizona school districts, as indicated by Tables V and VI.
### TABLE V

#### HIGH SCHOOL SUBJECTS OFFERED

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grades in Which Offered</th>
<th>Amount of Credit in Units</th>
<th>Required</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>x x x x</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Mathematics</td>
<td>x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algebra</td>
<td>x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Geometry</td>
<td>x</td>
<td>½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World History</td>
<td>x x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. History</td>
<td>x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Problems</td>
<td>x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>x x</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typing</td>
<td>x x x</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stenography</td>
<td>x x</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bookkeeping</td>
<td>x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Science</td>
<td>x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>x x x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>x x</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shop</td>
<td>x x x x</td>
<td>Boysl</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mechanical Drawing</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaking</td>
<td>x x x x</td>
<td>Girlsl</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Band</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glee Club</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Nursing</td>
<td>x x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trigonometry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition, during the year 1943-44 a pre-induction course was given in which twenty-four boys were enrolled; they were drilled in elementary military tactics and law.

Another war-time innovation was the pre-flight class made up of sixteen boys who were taught the operating principles and upkeep of the airplane motor.

It should be noted that Ajo High School offers no vocational guidance course. Probably this is due to the small number of graduates (thirty-four in 1941), the general belief that boys who graduate will work in the mines, and the small percentage of graduates who go on to college or university.

Expenditures to maintain a modern, efficient school system have been generous, as indicated by Table VII.
## TABLE VI

### REQUIREMENTS FOR GRADUATION

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course #1 No. Units</th>
<th>Course #2 No. Units</th>
<th>Course #3 No. Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>U.S. History</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>American Problems</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Homemaking or Shop</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>General Mathematics</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Science, Laboratory</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Algebra</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Plane Geometry</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Course #1, for those who do not plan to enter college or university.

Course #2, for those who intend to enter one of Arizona's teachers' colleges.

Course #3, for those who plan to enroll in some/institution belonging to the North Central Association of Colleges and Secondary Schools.
### TABLE VII

**FINANCIAL ASPECTS OF AJQ SCHOOL SYSTEM**

<table>
<thead>
<tr>
<th></th>
<th>Expenditures 1942-43</th>
<th>Budget 1943-44</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elem. and H.S.</td>
<td>Elem. and H.S.</td>
</tr>
<tr>
<td><strong>I. ADMINISTRATION &amp; INSTRUCTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A. Administration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Bd. of Ed. &amp; Secy. salaries</td>
<td>$525.00</td>
<td>$700.00</td>
</tr>
<tr>
<td>2. Bd. of Ed. &amp; Secy. office supplies</td>
<td>66.50</td>
<td>75.00</td>
</tr>
<tr>
<td>3. Other expenses, business control</td>
<td>64.17</td>
<td>100.00</td>
</tr>
<tr>
<td>4. Supt. &amp; other administrative salaries</td>
<td>4,900.00</td>
<td>5,150.00</td>
</tr>
<tr>
<td>5. Supt. office, clerical salaries</td>
<td>912.40</td>
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<td>6. Supt. office, supplies</td>
<td>72.17</td>
<td>70.00</td>
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<td>7. Attendance service salaries</td>
<td>75.15</td>
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<td>8. Health service salaries</td>
<td>1,705.39</td>
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<tr>
<td>9. Other expenses</td>
<td>120.00</td>
<td>100.00</td>
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<td><strong>TOTAL ADMINISTRATION</strong></td>
<td><strong>$8,440.78</strong></td>
<td><strong>$8,595.00</strong></td>
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<td><strong>B. Instruction</strong></td>
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<td>1. Supervisors' salaries</td>
<td>0.00</td>
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<td>2. Other expenses of supervision</td>
<td>154.28</td>
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<td>3. Principal's salary</td>
<td>2,800.00</td>
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<tr>
<td>4. Principal's clerk salaries</td>
<td>7.50</td>
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<td>5. Principal, office supplies</td>
<td>238.79</td>
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TABLE VII (cont.)

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<tr>
<th>Item</th>
<th>Expenditures 1942-43</th>
<th>Budget 1943-44</th>
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<tr>
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<td>Elem. and H.S.</td>
<td>Elem. and H.S.</td>
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<td>6. Teachers' salaries</td>
<td>$60,475.05</td>
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<td>7. Supplies used in instruction</td>
<td>4,772.75</td>
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<td>8. Supplementary text books</td>
<td>824.79</td>
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<td>9. Library salaries</td>
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<td>10. Library books</td>
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<td>11. Other expenses</td>
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<tr>
<td>II. OPERATION, MAINTENANCE &amp; OTHER CURRENT EXPENSE</td>
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</tr>
<tr>
<td>A. Operations</td>
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<td>1. Janitors' wages</td>
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<td>3. Light</td>
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<td>4. Water</td>
<td>1,703.43</td>
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<td>5. Power</td>
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<td>6. General care, grounds &amp; buildings</td>
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<td>7. Janitor supplies</td>
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<td>8. Other operation expenses</td>
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<td>TOTAL OPERATIONS</td>
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<td>B. TOTAL MAINTENANCE</td>
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<td>4,600.00</td>
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<td>C. TOTAL AUXILIARY AGENCIES</td>
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<td>Health, transportation, etc.</td>
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<table>
<thead>
<tr>
<th></th>
<th>Expenditures 1942-43</th>
<th>Budget 1943-44</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Elem. and H.S.</td>
<td>Elem. and H.S.</td>
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<td>D. TOTAL FIXED CHARGES</td>
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<td>Rent, insurance, etc.</td>
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<td>III. CAPITAL OUTLAY FROM GENERAL FUND</td>
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<td>1. Furniture, new</td>
<td>256.77</td>
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<td>2. Equipment, new</td>
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<td>3. Apparatus, new</td>
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<td>400.00</td>
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<tr>
<td>4. Other capital outlay</td>
<td>2,132.42</td>
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<tr>
<td>TOTAL CAPITAL OUTLAY</td>
<td>$3,244.99</td>
<td>$1,700.00</td>
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GRAND TOTAL

'I. ADMINISTRATION & INSTRUCTION | $79,104.09          | $84,720.00
II. OPERATION, MAINTENANCE & OTHER CURRENT EXPENSE | 20,775.51          | 19,712.00
III. CAPITAL OUTLAY FROM GENERAL FUND | 3,244.99           | 1,700.00

$103,124.59         $106,132.00

CHAPTER II

ANCIENT AJO

The present town of Ajo is located in the western end of Pima County 142 miles west of Tucson; it is forty-four miles north of the international boundary line between the United States and Mexico at Sonoitia, and forty-two miles south of Gila Bend. Except for one or two cattle ranches and a few villages of nomadic Papago Indians, it is the only settlement between Gila Bend and Sonoita. Had there been no valuable ore in the district, it is likely no town would have arisen. Hence the story of the discovery and exploitation of this metal gives us the record of the town's growth. Mines and town prospered or regressed together.

The Ajo mines have a picturesque setting in the foothills on the east side and at the north end of the Little Ajo Mountains. The town has an elevation of 1,751.67 feet, and is separated from the open desert by low hills brilliantly colored with strata of iron- and copper-stained rock. The setting is enhanced further by many varieties of desert shrubs and cacti - organ pipe, sahuaro, ocotilla, palo verde, ironwood.

Ancient Ajo was described as primitive, crude, and wild. The inhabitants were Papago Indians who had a few
shabby huts and irrigated small patches of ground. In his *Western Journal* Audubon tells about the desolate country near the Papago villages. He thought the country beautiful in many places, but scarcity of water and timber made living there precarious. While there were many birds and lizards, animals that could be used as food were scarce. It is said that the people ate turtles and any game they could obtain; there were Rocky Mountain sheep in the surrounding hills, but catching them with primitive instruments must have been difficult. The peace-loving Papago chose this region around Ajo in order to be far removed from the trails of the war-like and merciless Apache. Since there were no rivers or streams, no timbered slopes or valleys of grass for grazing animals, and since water holes were known only to the Papago who guarded his secret jealously, they lived unmolested here for many years.

The district was not always known by its present name. Among early Indian inhabitants it was called the Tinaja de Mu Vavi (container of much water), because of a natural-rock water tank which they held almost in reverence. But when Mexican invaders discovered large quantities of wild garlic, (ajo) growing on mountain slopes, they labeled the

3. Ibid.
place Minas de Cobre de Ajo (copper mines of garlic), and as Ajo the settlement has been known since 1854.

The exact date when the Papago first discovered a use for the dull red ore is not known. According to a tradition handed down for generations, the Papago worked the arroyos around Ajo for placer gold long before Americans came to the country. This seems logical, because the ore bodies still carry about twenty cents per ton in gold. Not finding gold in quantities, the Indians turned their attention to other resources. Certain it is they early used the red oxide and green carbonate of the ore in preparing paint for their bodies. They later learned, probably through repeated trials, that this metal could be beaten into sheets which in turn could be moulded into trinkets and small vessels. Father Kino traversed this part of the Southwest from 1691 for many years; he spoke of the Ajo Mountains, but made no mention of minerals there. Thus mining at Ajo doubtless had its beginning later than his last journey through Sonoita in 1702.

It is hard to separate fact from fiction in the early history of this section. We do know the country belonged

5. The erosion for centuries carried gold down from hillsides and concentrated it as placer on the bottom of the arroyos.
to Mexico at this time and, according to Papago legend, each year the Indian chief led his people to Caborca in the Altar district to barter gold for supplies. One year when the tribe returned home they found a group of about five hundred Mexicans in possession of their mine. They did not attempt to regain the property, since the Mexicans were their masters, but settled down to a policy of "watchful waiting." After the invaders had been digging ore for about eight months they were attacked by a large band of Apaches who were on their way from the Gulf to their stronghold in the Superstition Mountains. The surprised Mexicans, outnumbered and almost without arms, were defeated. Those who survived departed, leaving their supplies and a large amount of gold buried in the camp.

The Papagos were watching the fight from the surrounding hills. They had been the victims of many Apache raids and the two tribes were bitter enemies. The Papagos felt it was time for them to act, though their fighting equipment was meager. The Apaches were heavily armed; the

9. Later General Salazar sent a soldier from Mexico to search for this gold. He found native copper on the surface, but whatever gold there may have been was never found. Ajo Copper News, December 28, 1917, p. 4.)
Papagos placed their confidence chiefly in a buckskin pouch of mysterious powder carried by their medicine man. When thrown into the air this powder was supposed to start a whirlwind strong enough to destroy everything in its path. As the medicine man tossed the powder into the air, all the Papago warriors gave vent to ear-splitting yells; almost instantly a great whirlwind made its way toward the Apache camp, tearing up trees and shrubs as it went. Pandemonium reigned and the superstitious Apaches abandoned the field without a fight. By the time they collected their families and were starting to leave, the Papagos and another whirlwind were in close pursuit. At their old gold diggings the Papagos found provisions enough to last a year, but not the pot of gold supposedly buried by the Mexicans.

This is the story firmly believed today by the Papago. Even yet they congregate each year at the village of Mu Vavi, near modern Ajo, for a great fiesta in celebration of this ancient victory.

Later attempts were made by the Mexicans to regain possession of the copper and gold deposits at Ajo. One such attempt occurred in 1850. The Indians took some very

10. Rose, Dan. op. cit., p. 66.
11. Ibid.
rich ore to Don Chico Redondo who had it assayed and then formed a company to exploit the deposits. With Governor Gandara as one of its members, the company had headquarters in Sonora. The Indians were to be paid in beads and cloth for disclosing the source of the gold; when this payment was not made, they ordered the Mexicans to surrender everything, including their arms, and leave. The men foolishly obeyed and were attacked by the Indians. The mine foreman happened to be down in the shaft at the time and heard the trouble. He escaped and made his way to a watering hole twenty-five miles distant where another group of Mexicans was building furnaces to reduce the ore. After hearing his story all left for Sonoita, and that particular company never tried to operate the mine again.

Other Mexican miners came to Ajo and, finding no placer gold, started to work the copper deposits. Their development of the mine was crude and not extensive. Open cuts were made along the base of the hills in the main body of ore; early miners dug underground only after the native copper at the surface was exhausted. An irregular shaft was opened without timber or other support to keep it from caving in. The shaft was some sixty feet deep with an incline of about sixty degrees which made descent and ascent

Every ten feet a layer of mesquite logs four feet long and three feet wide was placed to serve as a resting station for the laborers. The rawhide bucket which a worker wore strapped to his back was large enough to hold fifty or sixty pounds of ore. It was stiff and hard; attached to its sides was a band of rawhide which went under the armpits and over the head. Surely this was physical labor at its hardest; these cumbersome buckets were removed only when the men quit work at night.

If the manner of packing ore to the surface was crude, the methods of digging ore were more so. A steel drill was used for boring holes, and lime was used for blasting powder. Some of it that had not thoroughly exploded was found years afterward.

Refining the ore was carried on in a manner equally simple. The richest ore was packed on mules and taken to a hand blast furnace at Elmonte in the Ajo Mountains where there were both water and wood. The metal was then taken to Altar to be sold.

It seems miraculous to the modern mind that such methods could meet with any success. Laborious and slow as they were, some ore was refined but evidently not profitably, for the mines were left untouched many years.

Probably by mere accident was the presence of useful material discovered in the Ajo section. Wealth in any form often leads to strife and so it was among Papago, Apache, and Mexican people of these early days when gold was found in addition to the red metal. These first attempts to convert the ore into a marketable product, meager and unprofitable as they must have been, yet were the opening wedge. Because of them word spread of the mineral possibilities around Ajo and so attracted others who, in turn, contributed their part toward the ultimate successful mining in that section and the establishment of a permanent town.
CHAPTER III

EARLY OPERATION OF THE AJO MINES
BY AMERICANS 1850-1856

While much of the history concerning Indian and Mexican mine operations near Ajo can not be verified, facts concerning the district after Americans began to work the mines in 1846 are more certain.

Much of this information has been furnished by Tom Childs, an early pioneer. He was born in 1822 on a farm in Mississippi. His parents died when he was very young, and a neighboring family by the name of Cox adopted him. Nothing more is known about him until 1846, when at the age of twenty-four he ventured with a group of trappers down the banks of the Sacramento River in California. The flame of the Mexican War was spreading rapidly into California, and the hated "gringo" found it wise to leave. Childs gathered together nineteen men in San Bernardino and crossed the sandy wastes of the Colorado desert in order to escape persecution. They crossed the Gila and came down the dangerous El Camino del Diablo to Sonora.

2. The old highway from the Gulf to Yuma was commonly called the Devil's Road.
where a friendly Mexican told them of a trail past the old Ajo mines which would take them either to Tucson or up the Gila. They followed the trail to the water tank of Mu Vavi, two miles west of the mines, where they camped for the night and rode over to the abandoned mines the next day.

It is believed this group were the first Americans to learn of mining possibilities in the Ajo section. Evidently none of the party felt that the ore was of any great value, however, for they located no claims and went on to Tucson. Their destination was the silver mines of La Plancha de Plata located near Magadelena, Sonora. Upon arriving in Tucson they found hostile feeling among the Mexicans, but fortunately were not attacked. A few of the men decided to stay in Tucson but the others, including Childs, bought supplies and resumed their journey. They told armed Mexicans near Nogales that they were on their way to investigate the Plancha de Plata and that they wanted to be friends. The Mexicans retorted that the mines belonged to the Mexican people and no Americans were allowed there. In the face of such opposition, the disappointed men thought it wise to return to Tucson.

4. It is claimed a piece of silver weighing 2,700 pounds was found by Spaniards at La Plancha de Plata.
5. Rose, Dan. op. cit., p. 17.
Evidently Childs was a born prospector, for he investigated mining rumors in other sections of Arizona and, after taking part in the California gold rush, again came to Tucson in 1850. While making arrangements to visit the Ajo mines once more, he met Peter R. Brady who also had been in the gold rush. They formed a friendship that lasted half a century. Childs induced his new friend to visit Ajo, where they found everything as Childs had seen it four years previously. They concluded the cost of opening the mines would be far beyond their means and so they should wait for better opportunity. Back in Tucson they separated, to meet again a few years later.

In the days of '49 many en route to California went by way of Ajo. Data are very meager on this period, but it is known as a time of great hardship and many hazards. For example, a Mexican carrying mail to and from Sonoita was killed by Apache Indians nine miles from Sonoita. A cross of stones marked his grave, and the place is now known as La Cruz de Mereclino. Then there is the story of Jose Ortega who, with seven other Mexicans, operated a business to ship goods by ox team to Yuma. On one trip they were attacked by Indians and all but one killed.

7. Among gold seekers from Mexico was Domingo Quiroz, father of Ygnacio Quiroz, who still resides in Sonoita. Ajo Copper News, February 8, 1918, p. 4.
These and many other similar incidents brought about cessation of work at the mines, and for a while the Apaches roamed undisturbed in that section.

Some time between 1850-1852, however, a smelter of the blower type, known as the Alamo, was erected twenty-five miles from Ajo, where a ranch now stands. Mexicans mined the Ajo ore at intervals and took it to this smelter until 1854 when the Arizona Mining and Trading Company began operations in the district. Thus Ajo was the site of the first copper mining by Americans in what is now Arizona, and it is also one of the oldest copper mining camps in the Southwest.

The Arizona Mining and Trading Company was really the outgrowth of another enterprise. In 1853 Peter Brady had come through Sonoita with Colonel Andrew B. Gray on the first transcontinental railroad survey. Brady was in charge of the expedition to survey the line for the first Pacific railroad from Indianola, Texas to San Diego, California, which was to be known as the Memphis, El Paso, and San Diego Railroad. The survey work was completed in seven months, but while in Sonoita Brady saw some very

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valuable specimens of copper ore from the Ajo mines, ore which also contained silver and gold. Colonel Gray sent Brady to Ajo with a Seri Indian, Pedro Mollino, for some specimens of copper; he wished to take these to San Francisco where he was promised the necessary capital to assist in mine development if he could show mines of merit on the American side of the boundary line. The information given about mineral wealth by Gray and Brady on their return to San Francisco created great excitement. It is true they had no substantial proof of this wealth, for a large collection of minerals which they gathered had been buried on the Colorado desert when their pack mule refused to go any farther.

In spite of this lack of mineral specimens, their belief in the value of the ore was strong and enthusiastic enough to convince others, for organization of the group later known as the Arizona Mining and Trading Company began in the summer of 1854. Seven or eight soldiers from the Mexican War were staying at the Rosette House in San Francisco. They were really just adventurers who had become interested in the prospects of getting rich through mining. Among them was Oliver Hayward, better known as

"Charlie" Hayward. While serving as a clerk during the occupation of Mexico he had found a description of the Plancha de Plata. After he lost this position he secured another with one of the English mining companies in the interior of Mexico, where he heard many stories of the richness of that country. From there he went to California and told his friends of the great mineral wealth of the Sonora frontier.

Among those whom he impressed was Edward E. Dunbar, a pioneer resident of San Francisco, who was noted for his energy and had been a good business man. The Gadsden Treaty was then completed, and men were interested in the new territory. Dunbar thought he saw an opportunity to rebuild his broken fortune, and therefore asked some of his associates to form a company to prospect for the great Plancha and other mines. With Dunbar as the first president and James Porter as secretary, the Arizona Mining and Trading Company was created under United States law. The

15. Other members were Fred A. Ronstadt, Charles Suchard, Major Robert Allen, Charles O. Hayward, Peter R. Brady, Joe Yancey, J.D. Wilson, William Blanding, A.S. Wright, J.R. McElroy, G. Kippen, George Williams, Dr. Webster, James Doten, Granville Oury, B. Hill DeArmitt, Frank Cleimer, and Charles Poston. Fred Ronstadt later operated the Delicias mine for Governor Pesqueira of Sonora; Charles Suchard was an artist and at times assistant to Gray; Major Allen was U.S. deputy quartermaster-general of the Department of the Pacific; Porter worked on the San Francisco Examiner in 1878;
capital was $1,000,000 divided into 10,000 shares of $100 each.

After the company was organized, the twenty members purchased equipment and left San Francisco early in October, 1854, on the old steamer Senator. At Los Angeles they bought animals and started for the unknown land in high hopes of returning with untold wealth. After a pleasant trip through the desert they crossed the Colorado River and camped on the Gila a little above where Yuma now stands. There they stopped to decide upon what route to follow into Tucson; from that place they planned to go to Tubac, where they intended to establish headquarters.

Brady persuaded the group to go by Sonoita and re-locate the Ajo mine if it was unoccupied. At Sonoita they found some specimens and secured a guide. Brady found the Ajo district in the same undeveloped conditions as when

15 (cont.) Hill DeArmitt was sheriff of Dona Ana County; the Hon. Granville H. Oury was first Congressman from Arizona; Poston, from 1856-1861, was deputy clerk and recorder of Dona Ana County which then embraced all of Arizona; he gave the state its name in 1863 since he helped write the act creating the Territory of Arizona; from 1867-80 he was registrar of the U.S. Land Office of Arizona.


18. This guide was major domo of Don Chico Redondo and owned a ranch in Sonoita.
he was there with Childs in 1850. They took possession of
the mine and agreed to incorporate if they found it advis­
able after prospecting for six months. After investigat­
ing the mineral possibilities, the men were well pleased.
Fourteen went on to search for the great Plancha; six were
left to continue the work and hold the mine at Ajo.
Hayward, Porter, DeArmitt, and Oury were among those who
stayed behind, and it is likely Brady also was with them.
The first ore which they took from the vein assayed seventy-
five per cent copper, three ounces of gold, and fourteen
ounces of silver to every hundred pounds of ore. It is
strange Brady had not recognized the mineral values of the
district on his first visit, for:

It is doubtful if there is another place in
the country where the wayfarer, utterly untutored
in respect of mines or minerals, can come as near
seeing what he is looking for as at Ajo. Most
inexperienced people on visiting their first mine
expect to see the gold, silver, copper, or other
mineral staring them in the face or crumbling
under their feet. And most often all they be­
hold is mountains of rock that all look alike to
them and all seemingly valueless. ... At Ajo the
big green-tinted hill that stands in the center
of the New Cornelia holdings is recognized at
once by anyone who ever saw a pile of copper ore
as a valuable mountain of the red metal.20

Mining in those days of 1854 required familiarity
with arms as well as with the pick. At this time the men

20. "Ajo District a Veritable Copper Field." Arizona,
    May, 1916, p. 16.
at Ajo were the only Americans from the Utah line to Mexico, and from New Mexico to Fort Yuma. The present boundary line between Sonora, Mexico, and the United States was not ascertained until 1855. The Indians and Mexicans discredited reports of the Gadsden Purchase and for a long time believed, or at least pretended to believe, that the Americans were attempting to hold the land illegally. This partly accounts for the bitter feeling at that time, particularly of Sonora residents, who made a number of attempts to drive out the Ajo settlers.

The most important of these attempts was inaugurated by Governor Gandara of Sonora, who demanded that the men vacate at once; some wealthy residents of Sonora maintained that the mines were within Mexican territory. Several letters passed between the American group and the Governor without an agreement being reached. In March, 1855, they heard that a troop of a hundred soldiers, accompanied by the Prefect and other authorities, was en route from the capital city of Sonora to occupy the mine and take the Americans prisoners. Some of the men went to meet the soldiers and attempt negotiations to turn them back.

Only a few were left at the mine, but they were not disheartened; they were determined not to give up the mine, for they felt they had every right to it. Under the terms of the Gadsden Purchase Ajo was forty miles inside the boundary set for the United States and, even if the mine were in Mexican territory, the former claimants had abandoned it for more than the time allowed by Mexican law.

After the enemy reached Sonoita, the Americans kept a sentinel constantly on watch. Thus they had warning when the Mexicans came into sight and awaited the attack at a fort on top of a hill, at the base of which was the camp spring. The Mexicans took their stand on another hill about two hundred yards opposite. In reality there were only forty-two Mexicans, but even this small number gave them the advantage. However, the Americans made up in arms what they lacked in men; they could fire eighty-four shots without stopping to reload.

The Mexican commander sent a messenger with a flag of truce, asking permission to detail his second-in-command to make peace. The Americans agreed and were told that the commander proposed to take the mine if it was not surrendered in two hours. He tried to convince them they would not

have a chance in combat, and said that if they would give up their arms they might leave in safety. The Americans answered, "We don't think of surrendering; if you want to fight, let us begin before the sun gets hot." The commander either had been ordered not to go to extremities or thought his troops would be defeated, for he agreed to leave the miners in peaceful possession if they would give his men water. This was done after the Mexicans had brought their arms and stacked them in the fort. The Mexicans had made a great bluff, but the Americans were not troubled by them any more.

Just as the troops returned to Sonora, word was received that the long-lost Plancha de Plata had been rediscovered by the fourteen members of the Arizona Mining and Trading Company. After several months' search they had found first a piece of pure silver weighing about four ounces. A few days later they had unearthed a lump of silver weighing nineteen pounds in some old shallow diggings overgrown with stout oak trees. The Americans were ordered to leave the country immediately. Since the Plancha de Plata was on the Mexican side, they obeyed and

26. Although there are several versions of this story, this one is believed to be the most reliable because its author was an eye witness to the incident.
returned to the Ajo mines.

Soon afterward the president of the Arizona Mining and Trading Company went to San Francisco to incorporate the Ajo enterprise. Dunbar was made superintendent, and work was resumed in a more orderly manner. Seventeen mining locations were made in 1855 and some work done on all of them.

Two pioneers have left interesting stories of this time. Dunbar says he had good workers. There were about a hundred peons, most of them Indians from Sonora tribes. One week's work had produced a large amount of very rich ore; on the following Sunday, Dunbar overheard a group of the workers talking about a certain lump which they had named San Eduardo in his honor. One of them, called Boca Prieta or Black Mouth, exclaimed feelingly, "What a pity this rich mine does not belong to us Christians." And Brady tells a story of their Papago workmen. The first day drill holes were completed and loaded with blasting powder the Indians were so much interested they failed to run at command and had to be forced away. When the blast went off

they were so frightened they ran to their homes, and it was some time before they could be persuaded to return to work. Their knowledge of mining was very meager, but they were the best labor available then.

Although Dunbar worked earnestly, operations at the Ajo mines were carried on under great difficulties. Though the ore was comparatively easy to mine, this advantage was far outweighed by other factors. One of these was lack of an adequate water supply. Dunbar says that when the Mina del Ajo was opened in 1855 it was forty miles from "living" water. His party got their supply from natural and artificial tanks in the rocks, the rain filling them once a year. He was the first to demonstrate that water could be secured in this manner.

Another handicap to profitable mining was unsatisfactory transportation facilities, both for supplies and ore, at exorbitant costs. For two or three years L.J.T. Jaeger transported the ore to Yuma, nearly a hundred miles away, on pack mules at $105 a ton. The general route was north of the Growler Mountains to the Gila at Mohawk and then down the river. This route, known as Jaeger's Road,

32. Rose, Dan. op. cit., p. 23.
35. The ore could be carried on rafts to Fort Yuma and the mouth of the Colorado at high water, but probably at no other time.
is not used now. The ore was hauled by mule team four hundred miles across the desert to San Diego. Later a man named Tomlinson brought a train of wagons from California. These wagons, drawn by mules, hauled the ore to the Colorado River. It was then taken down the river in barges to the head of the Gulf of California, Port Isabella, where it was loaded on sailing vessels and sent to San Francisco. These ships were under the command of Captain Isaac Polhamus, one of Arizona's oldest and finest characters, who was master of transportation for the old Colorado River Steamboat and Transportation Company. From San Francisco the ore was shipped in sailing vessels by way of Cape Horn to Swansea, Wales, which at that time was the copper smelting center of the world.

Freight rates were high; the rate to San Francisco was nine cents a pound or $180 a ton. The freight from San Francisco to Swansea was $15 per ton; sufficient sacks to hold a ton of ore cost $4.00, and $5.00 more per ton was added for commission. Not only were marketing costs

high, but the company had to wait from twelve to eighteen months for returns on the ore. One shipment of thirty tons of ore from Ajo, said to be the richest ore of its kind ever received at Swansea, yielded $360 per ton. Later shipments were worth from $200 to $375 a ton.

To carry on production at such high costs called for a great deal of capital. Fortunately the report of the find at Ajo caused much excitement in San Francisco where money for investment was not hard to procure. At that time the mineral collections of Donald Davidson, General Allen, and Captain R.L. Ogden in that city held choice specimens of the Ajo ores. Therefore money to back the company was obtained and, in spite of obstacles, operations were pushed ahead. At an expense of $100,000 the Arizona Mining and Trading Company introduced skilled labor, opened roads, made water tanks, erected buildings, mills, and smelting furnaces for extracting the ores. In 1856 a reverberatory furnace was built at a cost of $30,000. It was not successful, however; only one hundred pounds of copper were produced in it.

43. Blake, Wm. P. op. cit., p. 10.
44. Arizona Daily Citizen, February 15, 1894, p. 5.
45. Blake, Wm. P. op. cit., p. 10.
In spite of an extensive ore supply, factors in production and marketing combined to prevent intensive or profitable operations. Farish and Mowry cite poor administration as a reason for suspension of work by the Arizona Mining and Trading Company. Probably as a result of all these difficulties, the property was abandoned at the end of 1856 and eventually sold at a sheriff's sale to satisfy the caretaker's lien of $5,000.

After the company was dissolved, many of its former members remained permanently in the territory. Others stayed at the mine only until working supplies came and then left. Twenty-four years after the company was started, only eight of its twenty organizers were traceable. They were: Brady, sheriff of Pinal County in 1878; DeArmitt of Florence, Arizona; Doten of Yuma; McElroy, a miner of Calaveras County, California; Porter of San Francisco; Hayward, a farmer in Canada; Yancey, a rancher in San Diego; and the anonymous author of "An Arizona Adventure Twenty-four Years Ago" who was, he says, an accomplished vagabond always looking for something better and never finding it. He believed that if another group took hold of the property with plenty of money, it would

open up one of the finest mines in the West.

Although this first American company did not succeed, some of the men would not admit defeat. One of these was Dunbar, who had a good knowledge of the country gained by long and painful experience. He believed the Ajo mines would prove of immense value. In 1858 he went to Washington, D.C. with the hope of arousing interest among members of Congress. His efforts were futile; Congressmen had the idea that Ajo was in a desolate country about which too little was known to justify any action on their part. Later events fully verified Dunbar's confidence that the Ajo mines would yield good profits if sufficient capital were invested in improvements to lessen production costs.

CHAPTER IV

CLAIMS AND SPECULATIONS
1857-1899

These early residents of Ajo were not interested in establishing a town; their chief ambition was to get as much ore as possible from the mines and convert it into cash. Had they realized the extent of the deposits, doubtless they would have planned for better and more permanent living conditions. The community was not made up of families, but largely of men who came alone or in groups, prospected for a time, became discouraged or restless, and left. And among such a shifting population obviously there would be small interest in starting a school system.

The Arizona Mining and Trading Company had proved definitely that the Ajo territory held a vast quantity of copper ore, but it took many years of experimentation by a large number of different individuals and corporations before profitable methods of mining, refining, and marketing this ore were perfected.

Not long after the dissolution of this first American company an English corporation, formed by C.P. Boyer, began work at Ajo. He went to Germany to learn how to build
what was known as the Freiburg smelter, and on his return
had one constructed. It was built of adobe, shaped like
an oven, with a smokestack about twenty-five feet high.
This smelter, using the roasting process, was not success-
ful and was later torn down. However, this group of
English capitalists made some progress in developing the
mines. Seven distinct veins of copper ore were worked
extensively. Several of the shafts and tunnels which they
made were two hundred feet deep; ore was removed by
Mexican miners who climbed to the surface on escaleras
(notched trees used as ladders) placed in the shafts.

Factors beyond their control caused Boyer and his
associates to cease their efforts. Eventually the Indians
became hostile, the Civil War caused the withdrawal of
military protection from Arizona, the rate of transporta-
tion to Fort Yuma was at least $105 a ton, and the price
of copper depreciated. As a result, the Ajo properties,
like their California neighbors, became unprofitable and
operations slackened. After the Civil War they were shut

1. "Ajo, Past, Present and Future." Ajo Copper News,
   December 28, 1917, p. 4.
3. The exact date is not known, but at one time a herd of
camels was brought from Arabia to be used in carry-
ing water from the Gila River to Ajo. The venture
proved impractical; it gave rise to the legend that
the Arizona desert was inhabited by camels, though
none was seen after 1909. (Pumpelly, R.W., My
Reminiscences, p. 768.)
down, leaving a good many permanent improvements, and a large amount of ore upon the dumps. H.H. Bancroft is authority for the statement that these mines, "though rich, were abandoned from 1870 on account of expensive freighting. Work was resumed after 1880."

It seems true that the promoters were discouraged and there was little organized work at times, but the mines were never entirely abandoned. About 1872 Dan Noonan of Gila Bend formed the Ajo Copper Company which patented seven claims and started, but never completed, a water-jacket smelter. Also, in 1878 J.A. Robertson bought the interest of the Cleimer heirs in the Ajo mine. He prospected a little to the east of Ajo and reported himself much pleased with the excellent mineral country.

There was growing confidence in the mine at this time, and working conditions were more favorable. Operations were resumed on the old Ajo mines; the working force increased from eight in April, 1878, to twelve by May of that year. The deposits were large and easily accessible through open-pit mining, also there was plenty of water

6. Frank Cleimer was one of the organizers of the Arizona Mining and Trading Company.
and an immense quantity of mesquite for fuel was available only a few miles from the property. Several parties located mines, each claiming to have the original Ajo. In the estimation of one newspaper, "If specimens count for anything, they all have good property." Two loads of ore were hauled to Berk's station on the Gila fifty miles from the mine, and were then taken to the railroad by freight teams. These ores assayed a large percentage of gold and silver.

In July, 1878, the Ajo mine was reported sold to Barry and Company, Bostonians. A compromise was effected among the various claimants to the several locations, all of them participating in the proceeds of the sale. Ten tons of ore were shipped from the property to San Francisco and sold for $1,600. The ore contained a large percentage of gold, some specimens assaying as high as $1,600 per ton. In March of the next year the Arizona Sentinel reported, "The title to the Ajo mine has long been uncertain, but work is likely to be soon resumed on it."

This prophecy came true in June of 1879, and the ore continued to show a high percentage of copper. The mines

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8. Arizona Sentinel, July 20, 1878, p. 3.
10. Ibid., May 25, 1878, p. 2.
11. Ibid., March 15, 1879, p. 2.
were what then was considered an easy distance from the railroad, forty-five miles over good road, which made possible the marketing of ores with profit.

The year 1882 was encouraging. There was considerable interest in the copper properties of the Ajo district, and a brilliant future was predicted for them. "Perhaps the whole American continent could be traversed without encountering such an immense copper field as the Ajo combinations." Reliable and experienced mining men stated that any assertion in favor of the richness or extent of the Ajo mines could not be overdrawn.

There is hardly any doubt but that a hole sunk ten feet deep anywhere within the radius of ten miles of the central mountain of Ajo would show a considerable quantity of copper. There was enough ore on the dump in what was then known as the Meyers territory to keep a two-furnace smelter in operation for a year, and enough ore in sight to warrant any amount per day for an indefinite period. The Little Ajo mines were bonded for a handsome amount, but the sum they sold for was nominal compared with their actual value. A. Caldwell and several others bonded the property to B.F. Bivins, a well-known and energetic mine manager.

14. Ibid.
15. Ibid.
who proposed to make things hum. The prediction was that Ajo would not long remain in its present state of comparative retirement.

At this time sixteen claims had been filed on the main ledge, all equal in quality. The Old Ajo, central and oldest of the group, had been worked to a greater degree than the others. Work was scattered all around instead of being centered at one point. The Copper King, a southern extension of the famous Ajo mines, was reported to be very valuable. It was owned by A.H. Wright, W.W. Jones, and a Mr. Barter of Tucson. This mine was especially fortunate in having a quantity of wood on its surface and water at a depth of ten feet.

Claims and mines changed hands frequently. About 1883 P.T. Dowling secured control of the Ajo mine and organized a company. He issued capital stock and attempted to float bonds for a million dollars, but failed. In 1884 Tom Childs bought the Consolidated after the camp had been idle awhile. He shipped ore from seven claims patented over a period of fourteen years, and located some of the claims later held by the New Cornelia Copper Company. The ore had twenty-five to fifty-two per cent copper, with a

17. Ibid., April 6, 1882, p. 1.
18. Ibid., February 16, 1882, p. 3.
little silver.

The fame of the deposits at Ajo brought many prospectors to Arizona in the late seventies and eighties. Many were soon discouraged but the rich ore, so clearly seen, constantly tempted others to try their luck. "Desert rats" drifted in and located mining claims over the entire Ajo basin. Tom Childs and Rube Daniels were leaders of the group. They tried to set a good example by pasturing cattle among the mesquite to help feed the families of their Papago workmen. John Greenway asked one prospector, Frank Merrill, why he went barelegged and Merrill answered, "I used to wear socks, but they was always getting ketched in brush and tore, so I quit 'em." In spite of their rough appearance and poverty, these prospectors were straight-forward, courageous, and most of them honest. No better friends or more dangerous enemies could be found along the border.

In 1894 activity at the camp was heightened. Several new companies were formed and a little surface work was done. Stamp mills and concentrators were erected, but

22. Ibid., p. 169.
this renewed interest seems to have been short-lived. According to the Governor's Report of 1896, "A few miners and prospectors remain and are able to make an occasional shipment." While one newspaper contended that the "Ajo mines are waiting development." 

It might have been said also that the town was "waiting development." What few people were there lived in tents or rude shacks built of rock and clay. With the future of the mine so uncertain there was no incentive for building permanently, and as yet nothing was done toward organizing a school system. The few women residents were wives of Mexican and Indian laborers, and evidently gave no thought to the formal school education for their children. Deep grass flourished all around the section, rabbits appeared without number, herds of horses supposedly owned by Indians ran wild, and droves of burros were seen. These last were exterminated gradually by cattlemen who wanted the meadowland growth for their herds. Wagons hauled necessities from Gila Bend or Tucson. Under favorable conditions the trip from Tucson to Ajo took four or five days, and during rainy seasons it required two weeks or more even with twenty mules to a wagon.

Ajo early attracted many promoters, who found it easy to sell stock to gullible investors. Among the most successful of these salesmen was A.J. Shotwell. For years he made an easy living from claims in the abandoned camp of Ajo, an ideal place for his swindling activities. The nearest railroad station was forty-five miles distant at Gila Bend, with only one well along the road from there to Ajo. Before the days of automobiles the trip was very uncomfortable, and stockholders were not likely to do any personal investigating unless certain that something was wrong. Even if they came, Shotwell could easily send them home more enthusiastic than ever. Ore was readily seen and every piece in the fifty acres of hills looked like solid copper. In reality there were only a few streaks of fifty per cent copper. Most of the ore looked rich because it was stained by copper carbonate; it assayed only one or two per cent copper.

In 1896 under a three-year lease Shotwell held claims named the Cardinoff, Ajo View, Escondido, Golden Eagle, D.B. Hill, and Valley. His associates were a Mr. Stout of Gila, engineer on the Southern Pacific Railroad, and

27. Ibid., p. 168.
W.A. Westbrook of Tucson, blacksmith and rancher. The claims were leased from their owners, Childs and Jacobs, with the privilege of purchase for $200,000 if Shotwell desired. He then interested a Mr. Hoffer, former iron manufacturer, in the venture and in 1896 these two organized the St. Louis Copper Company to which Shotwell subleased the Cardinoff claim.

The next step was to raise money, and for this purpose Shotwell journeyed to St. Louis. He did not tell his prospective stockholders that the copper could not be extracted in marketable amounts from the carbonate ore. He pictured the mines as so rich he would not let any one company have more than one claim; if he did, it might become powerful enough to control the copper industry of the world. The St. Louis merchants to whom he told the story were flattered at being allowed to buy stock in the St. Louis Copper Company and finance a ten-stamp mill which was to treat ore on the Cardinoff claim. Money was raised and the stamp mill installed at a cost of $25,000.

John R. Boddie, a traveling salesman, was one of the stockholders; he told his customers that before long he could retire and live on the dividends from his copper

These glowing reports changed when the mill started to run. There was only water enough to keep it going half the time; the supply came from a slow seepage in the bottom of a few old shafts, and two or three hours' running the mill dried up the shafts completely. Then the miners had to wait for water to trickle in again. Shotwell did manage to ship $36,000 worth of concentrates, but it cost him $45,000 to do so. It is said that the richest concentrates ever milled in the United States were shipped out at this time, fifty-eight per cent copper and $60 in gold. The St. Louis Company went bankrupt. Mismanagement and insufficient water caused expenses to exceed income, and the board of directors began quarreling with the stockholders.

In spite of this lack of intense or large-scale operations, by 1898 the Ajo mines were known widely enough to spread Arizona's fame as a copper producer. True, only small quantities of ore were extracted, but market price was sufficiently high to yield producers a profit even after the high costs of hand sorting and transportation. The Governor's Report of that year describes the veins as not large but numerous; many of them were being worked in

Also in 1898 claims had been bonded by Childs to C.C. Bean, who shipped ore for two years. He was an interesting character, then in his seventies, with forty years of mining experience, chiefly in the Hassayampa Valley. He had represented the Territory of Arizona in Congress, but considered those years wasted because they were not devoted to the mining business. John Boddie once remarked that Ajo would be a fine camp if they had a railroad and plenty of water. Colonel Bean replied:

If you owned the Mississippi river and the Southern Pacific railway you would have no copper mine. To own a copper mine you have first to find the ore in almost unlimited quantities then the railway and water will come if you live in the African desert.\(^{33}\)

Putting this theory into practice, Colonel Bean secured an option on the patented property of one hundred thirty-five acres, with the privilege of purchase for $60,000. The property was owned by an estate in Philadelphia, represented by E.G. Hammersley. By mining the claims, Bean raised $30,000 and made many efforts to secure additional capital. He was unsuccessful because no

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34. Ibid.
mining expert would make a favorable report on the property, though he claimed that over twenty representatives from different corporations had examined it. One expert from England accused Bean of "salting" his shafts. Bean often said Copper Mountain was mostly carbonate and worthless at this time except to show as a means of selling stock, and that his property was the best in the camp. Operations of others in later years showed he was not far wrong. Failing in this mining venture, he returned to New York where he died. Although he had never owned his claims, they were known as the Bean property for many years. It was sold later for $75,000 and the buyers organized the Rendall Reduction Company. After changing hands several times, it eventually became part of the Cornelia Company's holdings.

These alternate periods of activity and inertia at the mines, along with numerous changes in ownership, substantiate Joralemon's statement that from 1856 until the beginning of the present century the Ajo district was worked only in a casual and intermittent way. However, with the incorporation of the Cornelia Copper Company in

1900 came more intensive efforts to increase the copper output of this area.
CHAPTER V

DEVELOPMENT AND ACHIEVEMENTS OF IMPORTANT MINING GROUPS 1900-1907

While there was little change in the outward appearance of the town during the period 1900-1907, there were important differences in mining. A goodly number of corporations and companies had been organized to exploit the deposits around Ajo, yet early in 1900 there was none big enough or financially strong enough to make the most of mineral possibilities. Though Shotwell undoubtedly was dishonest in many of his transactions, he is an example of there being "so much good in the worst of us"; for his negotiations eventually resulted in the Cornelia Copper Company, one of the most important groups in Ajo copper history. Several other corporations came into being at about the same time which, with the Cornelia, finally solved the problems that had kept former groups from succeeding.

After the failure of the St. Louis Company, Shotwell organized the Rescue Copper Company in an effort to save total loss to the shareholders of the St. Louis. From funds of these two companies he personally deducted enough to live well and to make a few payments on his
$200,000 option with Childs and Jacobs. He planned to keep most of the six claims (see Chapter IV, p. 49) for himself, but money was not coming in fast enough so he decided to let others have a part of the great ore supply and share in the prospective millions of profit.

John R. Boddie was just the man to help; he had bought stock in both of Shotwell's first two companies. Shotwell told him he must keep secret their plans for a third, lest officials of other groups learn too soon of the additional competition. Boddie thought himself fortunate to be chosen for this enterprise. Behind closed doors he told leading men of his territory about this opportunity. They knew he was honest, and evidently felt that anyone who could hold a job selling dry goods for twenty-seven years was a safe guide in a mining enterprise.

The men chosen to help form this new company were: Captain Huie, president of the Citizens Bank and Trust Company, Arkadelphia, Arkansas; W.W. Brown, engaged in banking and lumber at Camden, Arkansas; C.E. Neely, president of the Southern Arkansas Lumber Company, St. Louis; and W.K. Ramsey, banker, also from Camden.

2. Ibid., p. 171.
In April, 1900, these men joined Boddie on an inspection trip to Ajo. They left the train at Gila Bend and, since the town then had no hotel, they stayed over night in Captain Frank Welcome's livery stable. He was justice of peace and notary public at Gila Bend for all that section of Maricopa County; he also owned the only livery stable in town, furnished transportation across the desert to travelers and prospectors, and sold feed to teamsters hauling freight. The forty-five mile ride to Ajo was made by the men the next day in a Concord coach drawn by four horses. This was their first trip to Arizona, and the desert held much of interest for them. At noon they stopped at the half-way station, under a lonely palo verde tree, where they ate lunch, watered and fed the horses. The next stop was at Child's well, fifteen miles from their destination. They reached Ajo about dusk, too late to inspect the mines that night. The camp consisted of only a few men, mostly Mexicans and Papagos, who worked for Shotwell. There was a small grocery store owned by Colonel Hovey who was somewhat of a boss in that section. Through him miners employed laborers under contract at so much a day in currency, while Hovey settled with the

laborers in groceries and whiskey.

Shotwell had planned everything at the mine to make a good impression on the visitors. He had let water accumulate in old shafts for weeks, and outlined rich streaks of ore to show them. The next morning Boddie and his friends visited the mill, where a band of high-grade concentrates six inches wide was coming off the tables. Boddie took samples of the ore that assayed five per cent copper; the concentrates ran forty-five per cent. The ten-stamp mill, which had been idle for some time waiting for a sufficient supply of water to seep into the shafts and tunnels to run it, was started to show the men how easy it was to concentrate ores. Neely, like the others, had never been around a mining camp before. He called to Captain Huie:

"Say Huie, I am stuck on this proposition! No ox teams to break down or feed when too wet for logging, no dry kilns catching afire and burning up, no insurance, no credit man, no collector, no worrying over securing cars to make shipments, just simply grind up rocks and getting out the ducats.

While Boddie thought "the work looked simple and easy."

These novices took over a business they knew nothing about and pushed ahead blindly but with energy. Two

days convinced them they had the richest mine in the world. From Childs, Stout, and Westbrook they bought four claims known as the Butte, Mainstay, Sulphide Stringer, and Quien Sabe, making settlement with part cash and the promise to pay the balance in six months. They also paid Shotwell $19,500 plus a large block of stock in the new company. Money for these payments was advanced by Neely, Huie, Brown, and Ramsey to be repaid them later by the company.

Having completed these transactions in May, 1900, the four men returned to St. Louis where the Cornelia Copper Company was duly incorporated. The Cornelia was named in memory of the first Mrs. Boddie, and its charter was issued under the laws of the Territory of Arizona. Its main office was with that of the Southern Arkansas Lumber Company in St. Louis since the principal shareholders of the Cornelia also controlled the lumber concern. The officers were: W.W. Brown, president; C.E. Neely, vice-president; John R. Boddie, secretary; R.W. Huie, treasurer; and A.J. Shotwell, manager. The first Board of Directors was composed of W.K. Ramsey, C.W. Chamberlain, D.P. Richardson, and James McCallum.

Money for the development of the claims had to be raised. A hundred thousand shares of ten-dollar stock

were authorized. Boddie's old customers were allowed to buy a little at $2.50 per share.

Ore from the Cornelia claims assayed satisfactorily; it was taken chiefly from open pits ten to twenty-five feet deep. The $35,000 received from ore shipments was spent in sinking a shaft on the Quien Sabe two hundred twenty-eight feet and one on Mainstay one hundred twenty-five feet deep, in building an office, and in erecting a hoist engine. By the time the $35,000 was spent the men realized they had so far developed no important ores; they had not enough water to run a mill; and Shotwell's management was not according to sound business methods. The Cornelia applied for patents on its claims but for about four years did little work at the mines, merely keeping a watchman there.

Meanwhile Shotwell sold most of his stock in the Rescue Company. From these and his profits in the Cornelia deal he applied enough on his six claims to renew the option when it expired. He next attempted to start another company known as the Alamo to develop claims called Joint and Pendulum; but by then people generally were distrustful of him and would not invest. Unethical as he was, he must

be credited with foresight and evidently did have a real interest in the Ajo territory. At his instigation in 1900 the Cornelia Copper Company planned to improve transportation facilities by building a railroad to the Gulf of California. Though nothing was done toward actual construction of such a carrier, the idea was implanted and brought up at various times in later years.

By 1902 development at Ajo had been pushed upon a series of veins containing very rich ore. The Yuma Sun for January 3 of that year reported a cessation of activity due to the decline in the price of copper, but added that a number of claim holders were busily engaged in assessment work.

In 1903 the owners of the Ajo mines were Thomas Doak and Sons. Doak was a mining engineer of considerable importance, and he was convinced of the property's value. He also had options on the Shotwell and New Ajo properties. These were all located in the Ajo Basin, a depression in the volcanic hills three-fourths of a mile wide and about twice that long. The Shotwell property at this time represented an outlay of probably $10,000; the ten-stamp

mill and Woodbury concentrating tables located there were used by Doak and Sons.

By 1904 two main companies were in the field: the Ajo Copper Mountain Mines Company, controlling the original Ajo mine; and the Cornelia Copper Company, controlling the Shotwell mine. Both companies also held options from Doak and Sons, and each carried on for about six years without making much progress.

One of the biggest handicaps for all groups operating in the territory was lack of a satisfactory and profitable method of extracting the copper from the ore. Efforts to find such a method constitute one of the most interesting phases of mining history. The Ajo property had been equipped with a reduction plant using the Rendall process. It was claimed that this process treated all classes of copper ore with equal facility, and that average ores would yield ninety-five to ninety-eight per cent of their copper at the cost of $1.00 per ton. Horace Stevens characterized these claims as "very sweeping." Parsons says:

As far as the records show, even the shocking treatment to which the ore was subjected failed to put copper in such form that it could be recovered and shipped with a resulting profit.

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15. Tenny, J.B. History of Ajo District, p. 4.
17. Parsons, A.B. The Porphyry Coppers, p. 286.
18. Ibid., p. 287.
The directors of the Cornelia Company in 1906 were victims of a fantastic scheme for ore extraction, whose inventor was "Professor" F.L. McGahan of Fort Smith, Arkansas. He was an ingratiating little Irishman, a convincing speaker, and knew all the technical terms of chemistry and metallurgy. He already had swindled two chemical firms in St. Louis, but Shotwell and Boddie were too enthusiastic over his description of his proposed vacuum smelter to make a thorough investigation. They signed a contract for the use of the smelter in the United States and foreign countries; The Cornelia Company paid $35,000 and agreed to pay a certain percentage more in stock of all companies they might organize to use the process. McGahan claimed that from five to twenty percent more of the values in ores could be extracted at a cost of not more than a half compared with present methods of smelting. He described his process as follows:

In treating and smelting mineral ores and iron in a vacuum, the nitrogen in the air is excluded from coming in contact with same, practically eliminating all slag and the necessity of fluxing; furthermore none of the vapors or fumes being allowed to escape, the full values contained in the ores are secured, thus every bit of carbon and other volatile substance forming fuel quantities uniting with pure

ox-hydrogen, whereby great economy is secured in the reduction of all ores.

In addition to this, many other minerals are saved which under the present systems of smelting are destroyed or allowed to escape through the stacks.22

McGahan must have had a magnetic personality, for others believed:

He is not only an inventor, but a metallurgical scientist of national repute. These most remarkable discoveries by Professor McGahan are nothing less than epochal. At a single blow he has demolished the entire fabric of labor during the last 3,000 years.23

Parsons gives a truer estimate of his ability:

He condensed more pseudo-scientific nonsense into a few strokes, he exploded a dozen theorems in chemistry and physics that hundreds of years of painstaking research have served to establish, all in error it would seem.24

When the contract for the McGahan process was made, both the Rescue and the Cornelia companies wanted to be the first to install it; the inventor said he could supervise the building of only one furnace at a time. Since the Rescue Company was in debt, it was decided the new method should be used first by them. (The two companies had many stockholders in common, and in some things worked together.)

By now Shotwell had formed another group known as the Tri-Mountain Copper Company, with ten million shares of stock authorized, of which he kept six million. With the promise of enormous profits from the marvelous process, it was easy to sell stock in all three companies - the Rescue, Cornelia, and Tri-Mountain. One of Boddie's former customers, Charlie Chamberlain, spent all his time selling stock. In each new town he visited he allowed prospective stockholders to select one of their number for a visit to the mines with Chamberlain, all expenses paid. When the delegate returned home, usually his friends bought all the stock they could afford. As the building of the smelter progressed, all stock advanced; the Cornelia and Rescue sold as high as $6.00 about the time the smelter was ready. Shotwell and Boddie were millionaires on paper. The treasuries were overflowing, and McGahan ordered rush delivery on steel for his furnace.

With prosperity, dissension began. Boddie and Huie became suspicious of Shotwell's ability and appointed a new manager. It was discovered that money turned over to him for payment to Tom Childs was not being used for that purpose. A meeting was called at Fort Smith, Arkansas,

and a fair proposition presented Shotwell to extricate
him from his troubles and enable him to get back to a
sound financial standing; these offers he declined.
Shotwell exchanged the remainder of his Cornelia and
Rescue stock for stock of the Tri-Mountain Company and
opened an office in St. Louis. He could not complete
payment on his claims leased from Childs and the option
was forfeited. Knowing that the stockholders were not
responsible for this default, Childs sold the claims to
the Cornelia and Rescue Companies for the balance due
under the original option.

Shotwell had lost his influence. He claimed fraud
and brought suit for $200,000. Since he could not pay a
bond for costs, the suit was thrown out without a hear-
ing and soon afterward Shotwell disappeared from the
story of Ajo. He had become arrogant and offensive, es-
pecially to those who had assisted him.

While McGahan was busy getting ready to construct
the vacuum furnace, the Cornelia and Rescue Companies
continued selling stock to finance its installation.
Boddie opened an office in Los Angeles to pay for mater-
ials and ship parts to Ajo as fast as they were completed.

The Baker Iron Works of Los Angeles had the contract for the erection of the smelter. Boddie also made a trip to Mexico where he purchased a large body of iron and timber lands, in which McGahan was to have an interest as part payment for the use of his process. Captain Huie, president of the Cornelia, was in Ajo to hasten progress.

Later in 1906 the Cornelia and Rescue Companies, each owning about eighty acres and an undivided interest in the Tri-Mountain property, became involved in an argument as to dividing the property or consolidating. In the final settlement Cornelia's capitalization was increased from $1,000,000 to $3,000,000; the Rescue Company was absorbed and discontinued. The Cornelia Copper Company now owned all the claims formerly held by the two; with its original holdings it had 243 acres, of which only seventy-nine were patented. Securing patents on the balance was started, and the company tried to make the old stamp mill pay running expenses but could not achieve this. To add to their difficulties, payment of $5,000 was due Childs; Boddie was sent to St. Louis and managed to raise this amount.

At this same time the directors of the Gold of Ophir Mining Company, Los Angeles, were seeking a process to

30. Ibid., July 18, 1919, p. 3.
recover the gold from ore mined in the Calico Mountains near Barstow. Learning of McGahan's idea they negotiated with Boddie and Huie who agreed to build a three-ton plant in Los Angeles and use the process on gold ore. This plant, financed by Huie in exchange for Gold of Ophir stock, was completed about the same time as the smelter on the Cornelia property, and it was decided to hold the first trial in California. In the presence of prominent stockholders, Boddie lighted the fire in the furnace. McGahan had directed that a slow fire be kept for twenty-four hours then he personally would charge the furnace. When the group met the next morning, McGahan was not there; instead, from San Francisco he sent a letter saying he had been paid far too little for the invention. He would come to blow in the smelter only if they would pay him $50,000 more and a block of Cornelia stock. Naturally this was a decided set-back for all concerned. The Rescue and Cornelia Companies had paid over $80,000 for their smelter; that amount included its actual cost, salary to McGahan, and reimbursement for the use of the process. McGahan received $8,000 directly and about $26,000 had been paid to Mr. Putman of Indianapolis who

was supposed to be McGahan's brother-in-law, and who held a mortgage on the patent for money advanced McGahan. It was later found that he was only a fence to help McGahan in the fraud. In May, 1907, the Cornelia Company sued McGahan for obtaining money under false pretenses; and he filed a countersuit for damages of $200,000. Experts said McGahan was insane, so the Cornelia agreed to cancel the suit. The smelter at Ajo was never put into operation.

All this left the Cornelia worse off financially and still with no satisfactory refining process. They next hired an electrician named Anderson to build a plant. Joralemon says $20,000 more was spent on this leaching plant, which was almost as fantastic as the vacuum smelter; it did produce a few pounds of copper, but at a cost of a dollar per pound. In essentials the Anderson process was not unlike that which, ten years later, was to prove so successful in the hands of more resourceful metallurgists.

Undaunted by failure to solve this major problem, Boddie and his associates did not lose faith in their property. They kept the taxes paid because they felt it some day would fulfill all their hopes. Chamberlain's

34. Parsons, A.B. op. cit., p. 289.
son, Lee, stayed at Ajo trying to run a stamp mill, but could not make it pay expenses. At this time when the Cornelia became dormant, the company had a capitalization of $3,000,000 with paid-up capital of $1,000,000. According to the *Copper Handbook* of 1907:

> The Cornelia Copper Company claims to have in sight 25,000,000 tons of ore averaging 10 percent copper, with gold and silver values, which is an excessive estimate.  

Though not working their properties to any great extent, early in 1907 the two most important groups were still the Cornelia and the Ajo Consolidated. A third, whose property lay between that of these two, was called the Childs group. Several of the companies which were launched between 1902 and 1907 worked claims that eventually became part of the New Cornelia.

This period in Ajo history is noteworthy not only for the emergence of more powerful and persistent companies, but also because of the improvements, slight though they were, which were brought about in mining and refining processes. It was thus step on step that eventual, wholly successful methods were found. As yet the territory attracted mostly "desert rats," prospectors, and others with "get-rich-quick" ideas rather than families

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35. Joralemon, Ira B. *op. cit.*, p. 188.
who would come with the idea of making a permanent home. Thus civic conditions were given scant attention, and the absence of a school was not felt by residents of the Ajo community.
INTENSIFICATION OF DEVELOPMENT
1908 - 1916

Up until this time mining history at Ajo had been a series of ups and downs - periods of new claims being opened or old ones revived, followed by periods of stagnation due either to the falling price of copper or to discouragement and financial inadequacy of mine owners. With the formation of stronger corporations came better management and more concentrated efforts to find methods of making this vast ore body yield its inherent values to the world. Progress from 1907, therefore, was more noticeable and less interrupted than previously.

Heralding of the section's possibilities continued to attract newcomers. Among those who arrived in 1907 was Sam Clark, who later founded Clarkston. With M.G. Levy, who ran the only store and engaged in mining near the Mexican line, Clark secured a bond and lease on the seven claims of the Ajo Consolidated group, originally patented by Dan Noonan. Clark superintended the mine and Levy was bookkeeper. The Calumet and Arizona (a Delaware corporation with large mine holdings at Bisbee) had taken an option on this property from Childs but let it expire; the
present owner was the Rendall Reduction Company of Boston. They had also purchased the original Ajo mine from the Ajo Copper Mountain Mining Company and installed a fifty-ton reduction plant.

Work at Ajo was again interrupted by general economic conditions. The panic of 1907 caused the Cornelia and Rendall Ore Companies to suspend operations.

Clark was not long deterred, however, and in 1908 he erected a mill on the Ajo Consolidated. This consisted of: a ten-stamp mill purchased from Albert Steinfeld; a five-stamp mill and boiler belonging to Levy; three Wilfley tables; two Blake crushers; two sets of Cornish rolls which were never used; three gasoline engines; and two steam pumps. The largest engine ran the mill, and the pumps were used to take water from the mines into the well. The output with this improved machinery was from 2,500 to 3,000 pounds a day of concentrates running from thirty-five to forty-five per cent and from 600-700 pounds of pay ore. This was not treated in the mill but was shipped, mostly to the Copper Queen at Douglas.

5. Ibid.
This mill being a success, business picked up and many mining experts visited the camp. Two frequent visitors were John Greenway, manager of the Calumet and Arizona mine at Bisbee, and Ira B. Joralemon, chief geologist for the same company. Greenway stated that the Consolidated mine looked better each visit, while Joralemon advised treating the ore there rather than send it to reduction plants elsewhere.

Rumors that a railroad was to be built served to strengthen confidence in Ajo's possibilities as a mining center, and many new claims were located. In 1908 the Rendall Ore Reduction Company began advocating a fifty-mile extension of the Southern Pacific which would leave the main line near Theba, ten miles west of Gila Bend, and connect with Ajo. They believed there was enough six percent ore in their nine claims to justify the building of such a road, not to mention all the claims of others. This company was so hopeful of persuading the Southern Pacific to build the spur that they secured an estimate from Jones and Meehan, Boston contractors; their figure was something less than half a million dollars. The

6. Greenway had made a name for himself at Yale, in the Rough Riders, and on the Western Mesabi Range iron mines in Minnesota working under Thomas F. Cole, a director of the Calumet and Arizona. (Parsons, A.B. The Porphyry Coppers, p. 29.)

engineer of the Rendall Company, Mr. Bordwell, also surveyed the proposed route and estimated that the road could be constructed in one year because thirty miles of the route would be over level prairie. He judged that for such distance the cost would not be over $8,000 a mile, but from $15,000 to $20,000 per mile for the remaining mileage over uplands. Nothing came of these plans. An official of the Southern Pacific stated that, although it was probable a road to Ajo would be built eventually, there were no negotiations just then between his company and the promoters of the extension.

There were now several outstanding mining groups. Among these was the Cornelia which on September 10, 1909, was reorganized as the New Cornelia Copper Company with an authorized capital of $6,000,000; and the Rendall Ore Reduction Company. Three others were important. The first was the General Development Company with J. Park Channing at its head and backed by the Lewisohn interests. It secured an option on the majority of stock of the New Cornelia Copper Company. The second group was led by

S.W. Mudd and associates, who were largely responsible for developing the Ray Consolidated Copper Company. This group held an option from the Rendall Company on some claims at the south edge of the Ajo Basin, and also secured an option for $150,000 on the Bean property. The third group was composed of English capitalists who held an option from Tom Childs on some outlying claims in the basin east of the Cornelia mills. These last three groups started development at the same time; their goal was the great body of low-grade ore centering in Copper Mountain.

The engineers of these three groups, outstanding in their field, yet failed to make the right analysis of the deposits at Ajo. John Hays Hammond, C. Chester Beatty, and J. Park Channing said there was no ore in Ajo except for a shallow deposit of copper carbonate in the hills, and this ore could not be treated at a profit by any known or probable process. Doubtless as a result of this estimate, these groups failed to make any headway and gave up their options.

Other companies were more optimistic. When visiting Tucson in April, 1909, Mr. Lee, manager of the Rendall Reduction Company, said:

12. Ibid., p. 187.
Ajo is getting more attention than any camp in the territory. It deserves more attention than it ever had. I speak of it as a new camp on account of it not having had a very extensive development, although it is probably the oldest camp in the territory. ... There is one concentrating plant operating at a net profit of $100 a day with an expense of $30. There is another mill ready to run and our company will put in a larger mill a little later in the year, which ought to make the camp quite active. The possibilities of having a railroad within a year and a half or two years are better today than they ever were. Our company made their final payment on the mine last week, and from now on any money they raise will be expended in sinking shafts and on active developments. 13

Though there was considerable activity around various claims, the town itself showed little improvement. There were few homes or buildings well constructed, no demarcation between residential and business sections, dirt streets laid out helter skelter. A county deputy sheriff constituted local law enforcement; there was little sanitation, and connections with the surrounding territory were poor. Copper was carried by wagon to Gila Bend and then forwarded to Douglas by rail, while mail was brought in on horseback. The census of 1910 gives the population of Ajo as fifty. Permanent residents consisted of twelve or fifteen Americans, and a larger number of Mexicans and

In 1911 there were said to be approximately twenty Mexicans to one American.

The First School

The first school in Ajo, taught by Miss Athlyn Gibson, was started in 1912. For two years it was held in a one-room, adobe building, and for the next three years in a tent with tin roof. Ventilation was bad unless the flaps were open, and when it rained there was so much noise on the roof that classes usually had to cease. One of the requirements for graduation from the eighth grade was the ability to read English.

Franciscan priests came through Ajo every three or four months, but the first Protestant services were not held until March, 1915, and then in a pool hall. Evidently even yet few were convinced that the mines had sufficient long-time value to warrant expenditures for sturdy homes, adequate schools, and other permanent improvements.

In spite of the unattractive town, Ajo deposits continued to impress outsiders. One day in 1911 Sam Clark was visited by Mr. Gallagher, mining expert for the

15. Ajo Copper News, December 5, 1912, p. 3.
16. Interview with Miss Grayce Gibson, Tucson.
17. Interview with Mrs. Sam Clark, Ajo.
Gaskill interests and nephew of James Phillips.

Mr. Gallagher was pleased with the prospects and wanted his employer also to see the property. Clark and Levy gave him a twenty-day option on their leases (see page 72), and in due time Gaskill appeared. After sampling and making a mill test, he paid without hesitancy the $150,000 which the Rendall Reduction Company asked for the property. Ten per cent of this amount went to Clark and Levy as their commission; Clark remained as superintendent for about five months, then again went to mining for himself. The claims were bought under the name of Ajo Consolidated Copper Company.

Gaskill was so certain of his investment that he acquired adjoining claims for which he paid $100 each. He secured two from Frank Meyers; one from Charles G. Puffer; eight or nine belonging to William Gillard; two from Fred Steele, Bill Grove, and Claude Fenner; and twelve more from Sam Clark. He also bought the property operated by John Merrill, which is now the Glory Hole of the Southern claim. Having secured all this property,

18. Phillips was one of the leading copper operators of the United States; he had been associated with Nevada Consolidated and the Tennessee Copper Companies. Gaskill was formerly assistant superintendent of the Nevada Consolidated near Yuma.
20. Ibid.
however, Gaskill let it remain practically idle for two years, apparently waiting to see what the Calumet and Arizona Company of Bisbee was going to do.

In fact, the whole camp was in a dormant condition for this period, though claims were located for miles in all directions and new engineers continued to examine and buy property. Many options were given up because the refining processes then in use failed to produce sufficient or valuable enough ore to warrant continuation of operations.

It was largely through Greenway’s initiative that satisfactory refining methods finally were worked out. He convinced his employers of the value of Ajo deposits and in September, 1911, they secured a very favorable option on about seventy per cent of the capital stock of the New Cornelia, under the terms of which opportunity was given them to develop the tonnage of merchantable ore before making final payments. The Calumet and Arizona also held options on seven adjoining claims owned by the Rendall Company; in October, 1911, they took possession of all their property with George Arnold in charge.

Immediately they started to explore their holdings by diamond drills and test pits. At first everything went wrong. Hard luck with the first three drill holes cost Calumet and Arizona and its New Cornelia subsidiary $3,000,000; the ore tested only an average of 1.51 percent copper; a $50,000 payment came due which they were unable to meet. Instead of renewing the option to the Calumet and Arizona, the Rendall Company sold the property to James Phillips for $200,000 and he began diamond drilling there in 1913.

However, this preliminary work of drilling and testing proved that the tonnage was satisfactory in quantity, but a large part of it was carbonate surface ore, the values from which could not be recovered economically. The copper-stained hills were the outcrop of a low-grade ore covering an area of about fifty-five acres and reaching a maximum depth of over 600 feet below the surface. Material that averaged less than one percent copper was not estimated as ore because profitable extraction of the metal below this grade was not considered feasible. The ore body would supply a 6,000-ton mill for eighteen years

with the development of deeper ores below the level of steam-shovel mining; and with the probable later discovery of good ore on the Ajo Consolidated, the life of the mine would be much longer.

With a large body of ore assured, the Calumet and Arizona started in systematically to solve each of its difficulties; they had the engineering ability and the capital necessary for this gigantic task. During the experimental work, tests were made by James Potter and Henry Tobelmann, who also superintended the erection of a one-ton plant. It was in operation several months before the experiments ran smoothly. Later a "pilot plant" that would treat forty tons of ore a day was built, proving satisfactory only after six months of operation. Ricketts and Greenway reported the development of a leaching process that would produce copper for 8 1/2 cents a pound. Since the average selling price was then fourteen cents a pound, this would yield excellent profits.

During 1913 agitation was started again for bringing a railroad to Ajo, the prospective carrier to join trunk

lines at Tucson. Mine operators realized a railroad was the proper solution to their need for quicker and cheaper transportation, rightly believing such a facility would not only aid them directly but also would be an impetus for economic activity in the surrounding country. There were several possible routes offered,

but none yet sufficiently explored to warrant definite conclusions as to which might afford the greatest advantage from the several points of view that enter into such matters.32

News that the survey from Tucson to Ajo was only an alternative route stirred the Tucson Chamber of Commerce to call a mass meeting. The fact which Tucson representatives could not overcome in presenting their case to officials of the Calumet and Arizona was that the route from Tucson to Ajo was about 135 miles, while it was but forty between Gila Bend and Ajo. Also, construction of a carrier from Gila Bend would be easier since the country was practically flat and few engineering difficulties would be encountered. On the other hand, construction from Tucson presented the ordinary problems of railroad building in the West. To offset these disadvantages, however, Tucson representatives contended that freight

33. Ibid., September 12, 1913, p. 8.
tonnage would be very much increased if the road followed
the longer route. There was a rich cattle country con-
tributary to such a line; too, its extension would bring
it into close touch with the rich districts in northern
Sonora. The mining resources of this Sonora district,
which was newly opened at the time, awaited the conquer-
ing of transportation difficulties to become a prosperous
mining section. Boosters for the road to Tucson pointed
out further that a line from Gila Bend would be only a
branch line and would always remain as such. On the
other hand, the Tucson-Ajo route would bring into exist-
ence a railroad in direct line to the coast, one which
could be sold readily by the mining company to any rail-
road corporation wishing to put through a transcontinental
line.

In spite of these arguments, it was decided that
Gila Bend would get the railroad, mainly on account of the
shorter mileage. Doubtless World War I and the conse-
quent increase in demand for copper were main factors in
getting the railroad through to Ajo. Yet even when the
second survey of the proposed Ajo-Gila Bend carrier was
half completed, rumors continued that the road would be

built from Tucson. One report was that the El Paso and Southwestern would build its line from Tucson to Yuma via the New Cornelia mine, and would have a branch line from New Cornelia reaching Phoenix and the Salt River Valley by way of Gila Bend.

All these rumors ended with the incorporation May 18, 1915, of the Gila Bend–Ajo project for a period of fifty years under the general laws of the state of Arizona for the purpose of constructing, owning, and operating a railroad from a point at or near Gila Bend to Ajo. It was named the Tucson, Cornelia, and Gila Bend Railroad. Its freight would consist chiefly of ores from Ajo en route to the smelter at Douglas. The railroad was controlled by the El Paso and Southwestern Railroad (owned by Phelps Dodge Corporation), and by the Calumet and Arizona Mining Company through purchase of the railroad's entire capital stock. Work was commenced July 29, 1915, the right-of-way being donated by the United States Government, and the actual mileage was 44.33 miles. Construction was done by various independent contractors under general supervision of the El Paso and Southwestern.

From its beginning this road has been a financial success. In 1940 the Phelps Dodge Corporation became sole owner.

There were other important advances on the New Cornelia property during 1913-1915 which brought the district into prominence as one of the greatest producers of copper from low-grade ores. Mike Curley from Minnesota was made manager and several technicians were consulted - Stuart Croasdale, F.L. Antisell, Frederick Pope, A.W. Hahn, and W.H. Morse. Chloridizing roasts were made by Utley Wedge in the plant of the Pennsylvania Salt Company at Philadelphia. Joralemon estimated the ore available by steam shovel amounted to 32,481,200 short tons and carried 1.54 per cent copper. The ore body already developed would supply a 4,000-ton mill over twenty-six years. The experimental work was slow at first, but by the summer of 1915 a forty-ton plant was operating and leaching carbonate ores so successfully it was evident good returns from the investment were certain. In addition, there was much construction of new buildings.

The Calumet and Arizona now felt the time had come to complete its consolidation with the New Cornelia.

40. Briggs, Charles. op. cit., p. 3.
Therefore the New Cornelia Copper Company was reorganized under the same name; $3,100,000 in bonds and seventy-six per cent of its issued stock were held by Calumet and Arizona. After completing the consolidation in December, 1915, work was started to bring the properties into cooperative production. Satisfactory results of drilling for ore were finished in January, 1916, and were followed by the erection of a one-ton test plant.

Large-scale operations would have been impossible without an ample water supply. In 1913 the New Cornelia had drilled four wells, hauling an oil-well drilling rig from Gila Bend for the purpose. Machinery for the well was hauled in by burros. Water was so scarce then that even the amount needed for drilling had to be brought from the shallow well at Tom Child's ranch, and sometimes it took days to progress a foot in drilling. More than a hundred thousand dollars were spent, but the water was finally struck in well No. 1 at 650 feet. The supply was remarkably pure and apparently inexhaustible. Another hundred thousand dollars were expended in sinking a shaft and installing electric pumps. This water plant was

enlarged in 1916 and again later until its total output is 4,550 gallons per minute. The well is unique in that all the machinery is 700 feet underground.

This period of 1908-1916 was characterized by the solution of several major difficulties facing mine operators at Ajo. The railroad from Ajo to Gila Bend was placed in operation February 20, 1916, though track surfacing was not completed until April. The road had been pushed through in seven months, and has been an important factor in the development of this section. Two other events helped: a branch of the Phoenix Valley Bank was established at Ajo, and auto stage service was inaugurated between the two towns. Also, an adequate water supply was assured and a satisfactory method for treating the ore was in use. Important, too, was the consolidation of various properties which made possible large-scale management and increased financial backing with their attending advantages. The establishment of a school during this period was one more indication that Ajo was now considered the site of an enduring industry.

43. Rickards, T.A. op. cit., p. 279.
CHAPTER VII

PERIOD OF GREATEST GROWTH
1917-1942

The advances of the previous eight years made subsequent progress easier and more steady. After several years of striving to refine and market carbonate ores profitably, high-grade sulphide ore bodies were exposed. With this step began marked achievement for mine operators at Ajo.

The year 1917 marks the beginning of large-scale operations. Among its accomplishments was the completion and successful operation of the leaching and electrolytic plants with a daily capacity of 5,000 tons; also the acquisition in July of adjoining properties owned by the Ajo Consolidated Copper Company. New Cornelia paid $500,000 and 200,000 shares of its stock for this 1,150 acres of mineral lands thus adding 22,000,000 tons of ore to its low-grade reserves. Five million dollars were spent in preparation for working these great deposits. Experiments resulted in the successful treatment of surface low-grade carbonate ores which heretofore had been considered uneconomical when carrying less than five per cent copper. The consequent increase in copper output was of national
importance at this time when the allied forces of World War I needed all of this metal they could obtain. New Cornelia shipped its higher grade ore to the Calumet and Arizona smelter at Douglas until 1919. Its production in October, 1917, was larger than that of any previous month by more than a million pounds, giving it third place in the state in tonnage of ore.

New Cornelia spent around $7,000,000 to bring the mine into complete production. The efficiency of its methods is proved by the fact that the first dividend of $450,000 was paid before the end of 1918, though that was the first year of full-time operation. Advance is indicated also by taxes which increased from $163,000 in May, 1917 to $214,000 the following year. New Cornelia's success as an employer is attested to by the fact that only once did it experience a strike of any importance. This was begun in November, 1916, in an effort to secure higher wages. Though most of the regular employees took part, the mine continued to operate in all departments.

As spokesman for the company, Greenway based their refusal to meet employee demands on two points: that wages were fair and conformed to the union scale, and that profits

1. Arizona Mining Journal, June 1, 1921, p. 21.
would not permit the increase asked. Workers started returning in December and by January 13, 1917, all strikers were back and operations were resumed at the normal rate. It was found that the strike had been instigated by outsiders belonging to the I.W.W.²

To facilitate marketing of the ore, there still remained the need for good highways. Many of the early trails across the desert had developed into roads, but none was satisfactory. They were narrow, rough, with too steep grades and dangerous curves, and hard surfaced only for a few short stretches. Several years of organized effort finally brought results. In May, 1916, it was reported that Tucson and Phoenix were to spend $250,000 on roads to Ajo. The expenditure for the Tucson road was already authorized, and that for the Phoenix highway was practically assured.³ The existing road between Phoenix and Ajo was a detriment to trade relations because it was about two hundred miles long; the prospective road, with a bridge across the Gila near Buckeye, would cut the distance about eighty miles. From Tucson twenty-eight miles were to be improved at a cost of about $42 a mile and this work was to be first on Pima County’s program of

road construction. It would be graded from the Indian School road to Robles' ranch; the contract was let June 5, 1916.

This new road from Tucson to Ajo was completed in March, 1917, and described "smooth as glass"; but it failed to hold up after a month's traffic. One newspaper editor was of the opinion that thousands of dollars had been wasted; the road was honey-combed with holes and sharp-edged rocks were coming to the surface. While Ajo residents contended signs should be placed along the highway because there were fifteen roads leading from it between Ajo and the Indian Oasis, and in several instances travelers found themselves in Mexico.

The road became a political issue. Dr. W.P. Baker campaigned for election as a member of the Pima County Board of Supervisors on the platform, "A Dollar's Worth of Road for Every Dollar Spent." D.S. Cochran, then a member of the Board, joined him and charged that specifications had been changed to favor the contractor after the contract had been let. Cochran continued in his fight to have the road built correctly, even after not being re-elected in the spring of 1917. The efforts of these two

5. Ibid., April 6, 1917, p. 2.
failed to bring forth any Board action. On March 25 Baker ordered work on the Ajo road stopped when he found that the crushed rock used was not the size required by specifications.

A new contract was made with Warren Brothers on March 26, 1917, which

means that work which was contracted for in the first contract and was then considered necessary in order to make a good road, was left out of the later contract and will not be done.6

In July an extension of four months was given the contractors. Finally public feeling was so strong that several civic groups took action. The Luncheon Club appointed a committee of three to investigate the road. Soon thereafter a joint group from the Chamber of Commerce, Luncheon Club, and Road Advisory Committee undertook a complete study of the matter. Many felt that Chairman Estill of the Board of Supervisors should be recalled, for at all times he favored the contractors and even objected to spending money for an investigation. Another charge was that the Rosecrans Engineering Company, which received four per cent of the contract price for engineering work on the road, was also in the pay of the contractors. Engineer R.S. Cookinham answered this

accusation by contending that the amount of this four percent had been deducted from the contract price by Warren Brothers in return for an extension of time.

The tri-partite committee from the civic groups employed Engineer Ryan, a road expert, whose report upheld the charges against the Ajo road. Samples of the rock used were sent to the United States Bureau of Roads which found that materials used were of inferior grade. The Rosecrans Engineering Company withdrew from the job, leaving Cookingham to collect what he could from the Board. Warren Brothers claimed they lost $56,000 and on December 1 asked the county to remit $5,000 in penalties imposed when the road was not completed at the specified time. The road was finally put through and proved quite satisfactory until 1926; during the two years after that it was re-worked and in 1933 was oiled.

With their chief mining and transportation problems solved, in 1917 officials of the New Cornelia turned their attention to the town, which then had a population of about

8. In 1918 Ajo was preparing to secede from Pima County, largely because of discontent with road conditions. There was a proposal to incorporate Ajo and adopt the city manager form of government, with one set of officers for the city and county. Secession could be accomplished by vote of the people in the Ajo district without consulting other residents of Pima County. If Ajo had seceded, Pima County's tax rate would have been greatly increased, for nearly a third of its annual taxes come from Ajo.
2,000. They are proud of the fact that they did not follow the usual procedure of mining companies and build a town only after the mine was able to pay for it, but they undertook to care properly for employees in the developmental process. The town site was carefully planned and laid out within easy reach of the mine, the result being a model community of its kind. By the end of March the business block was ready for occupancy, and many homes were under construction. Complete water, lighting, telephone, telegraph, gas and sewer facilities were installed before the new town was occupied. People were slow to move from the former site until April, when a fire destroyed the entire old town with the exception of the Valley Bank and lawyer Reddington's office. The fire started from the explosion of a kerosene lamp in the Ajo Commercial store; ironically enough, at the time a graphophone record was playing "There'll Be a Hot Time in the Old Town Tonight."

Ajo is one of the few company-owned, unincorporated towns in the United States. The center of the present town is the Plaza 360 by 200 feet in size - a park with

11. Minutes of Pima County Board of Supervisors, August, 1917, p. 27.
bandstand, and attractively landscaped. Business firms and places of amusement occupy the modern block behind its broad arcades. To the east is the railroad station, while farther back are grouped the pleasant tile or frame dwellings of American employees and the school building. The mission type of architecture used in many public buildings and private homes preserves the spirit of the Southwest.

Business firms either are owned by the Phelps Dodge Company or, if privately owned, are run according to its dictates. The largest store is the New Cornelia Mercantile Company, a cooperative organization which annually distributes the year's profits among mine employees in proportion to the amount of their purchases at the store. To share in this profit an employee must be on the payroll of the company for at least four months prior to December 20. In 1918 the amount distributed in this manner was $33,000 - an average of $110 being paid to each American family and $75 to each Mexican family. Employees help with the store management; each department has a representative on a board which meets once a month with the store manager. Complaints are investigated and policies discussed. A general audit is made by an outsider
The New Cornelia Cooperative Mercantile Company is a business of noticeable size; its sales in 1936 were $713,802.77, an increase of forty-five per cent over 1935.

The Miners and Merchants Bank, also company owned, has always been run on conservative lines and has shown a continuous growth. The company hospital, completed in 1919, represents an expenditure of $15,000. Employees are entitled to any of its services for a monthly fee of $1.50 paid by single men and $2.00 by married men. Previous to its establishment wounded or seriously ill employees were taken to the Gila Bend hospital.

The two main churches - the Catholic, and the Federated which is attended by most Protestants - are located near the Plaza; each building is owned by its respective religious organization, though the mining company donated $5,000 toward the cost of each. There is also a group following the creed of the Assembly of God.

Visitors to Ajo will find very adequate accommodations. There are three main hotels all privately owned:

13. Ibid.
14. Interview with Mrs. Furnstadt, Ajo.
the Ajo, the Cornelia, and the Lyons; there are also
everal boarding houses and restaurants.

Politics mean little to Ajo residents; there are only
two officials elected: justice of the peace and con-
stable. Two deputy sheriffs are appointed by the Pima
County sheriff. Because of certain geographical features
of the county, the Superior Court is authorized to hold
sessions both at Tucson and Ajo. All persons charged with
a crime committed in that portion of the county lying
west of the Gila and Salt River meridian, and all civil
action involving title to or the right to possession of
lands lying in that portion of the county are tried at
Ajo, unless the court orders otherwise. Any other civil
action may be tried at Ajo by agreement of the parties.
Civil, criminal, and probate matters, by court order may
be transferred from Ajo to Tucson, or vice versa. The
first Ajo resident to serve on the Pima County Board of
Supervisors was Oscar C. Cole, who was elected to that
office November 7, 1922.

Ajo offers its residents more than the usual number
of cultural advantages usually found in towns of equal
size. It is justly proud of its musical programs, and has

16. Inventory of County Archives of Arizona, No. 10,
p. 153.
17. Minutes of Board of Supervisors, Book No. 8, p. 115.
an energetic Little Theater group. Besides the recreational facilities provided for mine employees and the playground equipment at the school, there are: a very fine swimming pool open to all, golf and tennis courts. In addition there are the usual clubs and lodges: the Woman's Club with various branches, American Legion and Auxiliary, Spanish War Veterans and Auxiliary, Knights of Columbus, Masons, Elks, and Woodman Circle. An American Red Cross chapter and a home defense group are active also.

There are two suburbs of Ajo, though both are practically ghost towns—Rowood, a mile east, and Gibson, a mile west of the main town. In 1916 Rowood was founded by Sam Clark and originally was called Clarkston. There were a main street and several back streets with possibly fifty or seventy-five houses. In 1916 and 1917 it was the principal residential section; at one time its population was approximately 1,200. In the years before the present site of Ajo was selected, Clarkston was the center of amusement facilities: saloons, dance halls, and a moving picture theater. It was often the scene of brawls, even murders, and was headquarters for old-timers.

having such colorful names as "Gold Tooth" Smith, "Yellow Dog" Griff, and "Hog-eyed" Hayes. Lots were rented at $10 and $20 a month for business purposes and at a lower rate for residences. Improvements were made by tenants, but reverted to Clark at the end of the lease. The Calumet and Arizona Company obtained an independent water supply for Clarkston by drilling wells. Water rates ranged from fifty cents a month for single persons to three dollars for families.

The name of the settlement was changed to Rowood in 1919 when application was made for a post office there. Federal authorities objected to calling the office Clarkston because of its resemblance to other places in the United States. In 1917 fire destroyed much property, and from then the population dwindled until only 119 were left. Another fire in 1931 completed the downfall of Rowood. The majority of its residents moved into Ajo proper.

About the time Rowood was started, the little town of Gibson also was building up around mining claims owned by M.E. Gibson and known as the Rustler claims. This suburb has its own utility company, a chamber of commerce,

and operates as a separate town from Ajo although it is not incorporated. Real estate, homes, and business places are privately owned.

The population of Ajo, Gibson, and Rowood for 1940 was 4,678 and for Ajo alone 3,658. Living costs compare favorably with communities of like size elsewhere in the state. Sanitary conditions are supervised rigidly by the mining company.

As the town of Ajo developed, the mine continued to progress though not without interruption. A flotation concentrator to replace the old leaching process in treating sulphide ore and a subsidiary crushing plant, started in 1922, were not completed until 1924. The depression in the copper market and consequent shut-down April 5, 1921, caused a deficit for the first time in the history of the Calumet and Arizona Company. In 1922 only 320 men were employed but by April, 1923, operations had again reached a satisfactory point; all employees, about a thousand at that time, were given a wage increase of ten per cent.

Not content with one railroad for its town, in 1920

Calumet and Arizona had resumed efforts to secure another from Ajo to the Bay of St. George at the head of the Gulf of California. Greenway seems to have been back of this move. Such a railway would be of great benefit to the entire Southwest. It would effect a great saving in freight on incoming fuel oil and timber for the mining companies, and on copper shipped out. Also, it would give El Paso a close tidewater connection and nearer direct connection with Oriental trade.

In 1921 a preliminary survey for a railway from Ajo to a point on the Gulf was made and a route found which had no heavy grades or curves and which, for its greatest distance, would be practically level. Concessions of a favorable kind were reported as secured for the lease of a strip of land in Mexico south of the border at Yuma; but negotiations fell through when it was learned that the Mexican Government's constitution would not permit the leasing of its lands.

Undiscouraged, the promoters of this project sought action once more in 1923. It was stated that Douglas interests planned to build from Phoenix to Ajo and on to the

27. Ibid., February 5, 1921, p. 5.
Gulf, provided enough mining companies in Arizona guaranteed tonnage sufficient to make such a venture pay. This plan also failed to materialize, but the subject was not forgotten. Once more in 1928 the people of Ajo were urged to bid for a railroad that would eventually reach the Gulf. Directors of the Altar and Cananea Mining Company probably were promoting this last agitation. They believed that their property, El Cobre, forty-two miles west of Sasabe, would develop into a big mine and a railroad connecting it with the Southern Pacific would be a decided asset. To date there is no such carrier.

Beginning in 1928 several changes took place in organization and ownership of the mining property at Ajo. New Cornelia was brought under Calumet and Arizona's central control but each property had its own manager; Mike Curley was at Ajo while H.A. Clark was in charge of other Calumet and Arizona mines. In April, 1929, the New Cornelia was completely absorbed. Up to that time it had paid $18,630,000 in dividends; its plant and equipment were estimated at between twelve and twenty millions. The final shift in ownership came October 1, 1931, when the

Phelps Dodge Corporation acquired the assets and liabilities of Calumet and Arizona. Phelps Dodge issued 3.25 shares of its stock for each share of Calumet and Arizona; 2,605,005 shares were issued for this purpose, and by the end of 1931 the greater part of Calumet and Arizona stock had been turned in. The two properties from then on operated as a unit under one organization.

Due to the depression, all operations at the New Cornelia branch ceased in April, 1932. Naturally this left most of the miners without work. By January, 1933, Ajo was at a standstill; deterioration followed both in the town and at the mine. Only twenty-eight men were employed, and the payroll for that month was but $3,500. Manager Curley found his ingenuity hard pressed to keep miners and their families from undue suffering. Production was not resumed until July, 1934, but since that time has been interrupted only for short intervals. Much work was necessary during the last half of 1934 to improve the pit, repair machinery, and build up a reserve of broken ore before putting the shovels to work. Both the power plant and concentrator needed to be brought up-to-date. During the ten months of operation in 1935 two electric shovels

were installed in the pit, additional areas for digging were marked out, and new dump areas were opened for waste disposal. Accelerated demand for copper made production possible all through 1936, except for a six-weeks' shutdown to permit installation of a new crushing plant. Expenditures for this and other equipment put the mine back into excellent condition.

Many workers who had left Ajo during the lean years returned, along with newcomers who hoped to find employment at the mine. A hundred new houses were erected in the American residential section, also many in other parts of town. In December, 1936, the El Paso Natural Gas Company completed a pipe line to Ajo, having borrowed $525,000 from the Phelps Dodge Corporation to finance the project. Major improvements at the mine were practically complete in 1938, and operations were continuous except for three weeks during that summer. It seemed probable no major capital expenditures would be required for some years to come.

Management under Phelps Dodge ownership has been very successful in dealing with labor. Workers are hired from local applications; it has not been necessary to send away for any type of worker in recent years. In percentages, which have been practically the same for the past six years, employees may be classified as follows:
The total number employed August 1, 1940 was 1,080; by January, 1941, this number increased to 1,290 with a semi-monthly payroll of $127,500. For many years mine employees were discouraged from joining national labor unions. However, in June, 1941 the National Labor Relations Board ordered Phelps Dodge to disband the Ajo Association of Copper Mine Employees and to reinstate with back pay six workers who had been dismissed because of membership and activity in other unions.

Employees are paid by check bi-weekly. The 1941 rates of pay varied from a low of $3.08 per day for common labor to $8.48 for electric shovel engineers. The most important intermediate rates were $5.76 for mechanics and electricians, and $6.40 for blacksmiths and shop foremen. There is no provision for old-age retirement funds; all employees are covered by the Social Security Act. The company has an Employees Benefit Association which covers those forced to retire on account of physical disability, and pays for all time lost from accidental injury off the job and for sickness. In fulfillment of the government's desire to speed up production of vital materials, in

33. Letter from Phelps Dodge Corporation, August 28, 1940.
34. Arizona Mining Journal, June 30, 1941, p. 15.
April, 1942, the mine began operating on a seven-day basis.

Employees work under safe, sanitary, and comfortable conditions. They have a representative committee for conferring with the management on matters affecting their work or living conditions. No one is discharged or otherwise disciplined without proper investigation into the merits of such action. Recreational opportunities for employees are encouraged and sponsored by the management through an athletic association; money and material to assist in its activities are provided by the company.

Recently Metal Trades Councils' representatives from Ajo, Morenci, Verde district, and Douglas made demands upon the Phelps Dodge Corporation including wage increases from $4.20 to $5.60 a day for unskilled labor and a minimum of $9.20 a day for mechanics; vacations with pay ranging up to three weeks, depending upon the length of service; and a union shop at all of the company's Arizona properties except the Copper Queen branch at Bisbee.35

The company now gives a week's vacation to employees of three years' service, and agreed to extend this vacation allowance to all, but denied the other demands. Other issues in the dispute were referred to Secretary of Labor Perkins.36

Improved highways to other parts of the state have been of immeasurable assistance in Ajo's growth, both as a town and as a copper center. Hard-surfaced highways now connect Ajo with Yuma, Phoenix, Flagstaff, Miami, and points in between. The road to Tucson is paved except for a stretch across the Papago Indian Reservation, and plans are under way to persuade the Indian Service to hard-surface this distance. The probabilities of achieving this are increased by the present necessity for highways serving military purposes. Because of that need, the government has authorized the building of a hard-surfaced road through the Organ Pipe Cactus National Monument, linking the Tucson-Ajo highway with Sonoita, Mexico. War Production Board officials in Washington have authorized an A-1 priority rating for materials necessary for this project. This twenty-eight and one-half miles will form the American side of a highway extending to Rocky Point, Sonora, on the Gulf of California. About half of the seventy miles in Mexico from the American border to Rocky Point has been completed, and the remainder is to be finished soon. Completion of this highway will make it possible to drive from Ajo to the California Gulf.

distance of 120 miles, in two to three hours. It is possible this short route, together with the reduction in cost brought about by a recent Interstate Commerce Commission ruling that truckloads of ore need not be insured, will encourage the hauling of ore directly from Ajo to ships.

All factors considered, the immediate future looks bright both for the company and the town of Ajo. At the present rate of copper production it will take twenty years to reach the thousand foot level in the pit, which is considered the lowest possible with present steam-shovel methods of extracting the ore. When the open-pit method proves unsatisfactory, other means of excavating the ore will be used. It is estimated there remains enough ore in the mine to last for fifty years.

During the present world crisis Ajo is coming to the front in several ways aside from its importance in supplying copper. Not only has the airport been extended and improved, but there are plans for a second airport to be used as a bomber base. Also, the government is in possession of the Ajo Gunnery Range for five years, the Army Air Corps having taken it over for practice purposes.

41. Ibid., September 18, 1941, p. 1.
The government is authorized further to take possession of 1,077,500 acres in the Ajo-Gila Bend district.

Ajo's importance in the state is indicated by taxes paid on company-owned property there. In 1920 New Cornelia paid $262,000 and for 1941 the amount paid by Phelps Dodge Corporation was $426,883.82.
CHAPTER VIII

CONCLUSION

Ajo has not become a model mining town over night. A period of almost a hundred years (1846-1942) was required to realize fully and develop intensively the mining wealth of the Ajo district. From sixth place in Arizona's list of copper producers in 1916, it has advanced to second and is largely responsible for Arizona's leading the nation in output of this important metal.

When one visualizes the growth of Ajo from a desert settlement of a few rude shacks to one of the greatest copper-mining towns in the country, he feels how dramatic events there have been. An Ajo pioneer has tried to interest a moving picture company in portraying its spectacular development. Surely a most interesting play could be filmed showing the transformation from Indian village to modern city, from "chicken ladders" and ore buckets to the present-day production of the open-pit mine with its great steam shovels, and from a one-room adobe school to the attractive, well-equipped buildings there today.
Ajo is one of the oldest towns in Arizona, and yet relatively new. Prospectors were there as early as 1850, but little of importance happened to the town itself until 1917. All consistent growth has come since that time. Today it is up-to-date in every respect and, although company owned, its residents have no feeling of exploitation but show admirable loyalty to the Phelps Dodge Corporation.

Like all mining communities, Ajo is very sensitive to general economic conditions. It has grown and hummed with activity or fallen into a state of stagnation according to the demand for and the price of copper. In the prevailing situation it will continue to experience accelerated operations for the duration of the war, and should have at least normal progress for some time afterwards.

Though there doubtless will be found substitutes for copper in some articles - such as the proposed use of silver instead of copper in electrical equipment - it is certain nothing can take the place of this metal in ships, for example. And after the present struggle it is most probable our nation, among others, will have a great increase in naval vessels of all types. Also, in the post-war era, countries such as Russia which have long imported copper from the United States will certainly increase their purchases of plant equipment and other
industrial goods manufactured in part with copper.

To offset the finding of substitutes for copper there are new applications for this metal. As an illus-tration, after a long series of experimentation two Detroit metallurgists found that with the addition of two per cent of beryllium, copper can be hardened by heat treatment as is steel. Besides its great strength (a rod of beryllium-copper half an inch in diameter can lift twenty tons), this alloy has many other qualities which give it wide usefulness. It can be used in tools to replace iron, which might strike sparks and thus cause explosions in factories; it will not rust, and is therefore valuable in machines that must operate in damp places or near corrosive chemicals; it does not affect the magnetic compass on a plane, and thus render it unreliable as does the steel now used in buckles on parachute harness; it does not harden until treated with heat, and so saves time in the casting of gun parts.

With a known ore body sufficient for twenty-five to fifty years at the present rate of output, and with conditions indicating an increase in the demand for copper, there is every reason to believe that Ajo has a long and

interesting economic history yet to experience. And as part of that history, judging from its past development, we may expect the school system to keep in step with educational progress throughout the nation.
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