

ANNUAL REPORT
OF THE
SURVEYOR-GENERAL
FOR 1856.

[JAMES ALLEN, STATE PRINTER.

CONTENTS.

I. STATE LANDS.

1. School Lands
2. School Land Warrant Locations for 1856.
3. Swamp and Overflowed Lands and Returns.

II. IMMIGRANT WAGON ROAD.

1. Roads recommended.
2. Report on Sierra County routes.
3. Report on Calaveras County routes.

III. COUNTY ROADS.

IV. COUNTY BOUNDARIES.

1. Surveys under Special Acts.
2. Surveys under General Act.
3. Errors in Boundaries and proposed amendments.

V. EASTERN BOUNDARY.

VI. STATE MAP.

VII. INTERNAL IMPROVEMENTS.

1. Railway System.
2. Supplies of Water.
3. Reclamation of Swamp and Overflowed Lands.

VIII. GEOLOGY OF THE STATE.

1. Geological Survey.
2. List of Mineral Specimens added to the State Cabinet.

IX. STATISTICS.

1. Reports from County Surveyors.
2. Reports from County Assessors.

3. Reports from other sources.
 4. Statistical Table.
 5. Recapitulation.
 6. Statistical notes.
- X. CLAIMS.
- XI. SURVEYOR-GENERAL'S OFFICE.
- XII. APPENDIX
- A. Circular for surveys of Swamp and Overflowed Lands.
 - B. Annual Circular to, and reports from, County Surveyors.
 - C. Annual Circular to Boards of Supervisors and Assessors, and Reports from County Assessors.
 - D. Communication from A. P. Chapman and Geo. H. Goddard, Civil Engineer, on Sierra County road routes.
 - E. Communication from A. S. Taylor on Monterey whale fisheries.
 - F. Meteorological tables from Dr. Gibbons.
 - G. Claim of survey account of Wm. Mock, County Surveyor, Sonoma County.
 - H. Claim of Geo. H. Goddard, Civil Engineer.

SURVEYOR-GENERAL'S OFFICE,
Sacramento, January 12th, 1856.

To His Excellency,
J. NEELY JOHNSON,
Governor of California:

SIR: - As required by law, I have the honor herewith to transmit the annual Report of my office for the year 1856.

The unavoidable delay in the receipt of returns from the County Surveyors, and County Assessors, - some having been received as late as the 8th inst., - has prevented an earlier transmission of the Report.

The action of this office during the past year, and its future wants under the requirements of the various laws prescribing its duties, are reported as follows:

Respectfully, etc.,

J. A. BREWSTER,
Surveyor-General.

REPORT.

I. STATE LANDS.

1. SCHOOL LANDS.

The Act of May 7th, 1855, "To provide for the selection of lands donated by the United States to the State of California, for the support of Common Schools and for the erection of Public Buildings," requires the Surveyor-General, (calling upon the County Surveyors for assistance,) to make selections of such lands from time to time, in tracts located according to the system of United States Public Land Surveys, and for his guidance therein, to procure from the United States Surveyor-General, certified copies of survey plats of such lands. To perform this duty, it is necessary for the Surveyor-General to visit the several land offices for information, and the offices of many of the County Surveyors, to secure a judicious selection, as well as to procure the necessary maps from the United States Surveyor-General. In consequence of the want of appropriations for this purpose, no selections have been made, except in the counties of Stanislaus and Merced, although large bodies of land are reported by the several Surveyors as available in their respective counties for School Land locations, and which are rapidly being lost to the State. In this respect, a great necessity exists for action by the Legislature to secure the State interest, by relieving the Surveyor General from dependence on the County Surveyors. I would recommend that the State Board of Education have control over the School Lands, that the Surveyor-General be empowered to make the selections assisted by the School authorities of each county, and the lands be registered in the Surveyor-General's office for purchase; also that the selections of lands donated for University purposes to be made at once, under the same authority, so that the State, either alone or in combination with some other suitable body, can establish an institution of learning to be the center and head of the State system of education. The longer the delay in the location of these lands, the greater is the loss to the State from the rapid occupation of valuable property now being daily made by settlers under the United States pre-emption laws.

The selections made of School Lands are herewith reported, as follows:

STANISLAUS COUNTY.

Selection.	Township.	Range.	Section.	Subdivision.	Acres.
1	3 S.	13 E.	22	S. E. $\frac{1}{4}$	160
2	3 S.	12 E.	18	E. $\frac{1}{2}$	320
3	3 S.	12 E.	17	W. $\frac{1}{2}$	320
4	3 S.	11 E.	13	-	640
5	3 S.	11 E.	21	N. W. $\frac{1}{4}$	160
6	3 S.	10 E.	19	S. $\frac{1}{2}$	320
7	2 S.	12 E.	25	S. $\frac{1}{2}$	320
Total.....					2,240

- Selection No. 1. – Sandy loam soil; scattering timber. Value, \$5 per acre.
- “ No. 2. – Soil, black sandy loam. Value, \$2 per acre.
- “ No. 3. – Soil, black sandy loam. Value, \$2 per acre.
- “ No. 4. – Soil, rich sandy loam. Value, \$2 per acre.
- “ No. 5. – Soil, rich sandy loam; scattering timber. Value, \$2 per acre.
- “ No. 6. – Soil, rich sandy loam; scattering timber. Value, \$1 25 per acre.
- “ No. 7. – Soil, rich gravelly loam. Value, \$3 per acre.

The foregoing selections were made by Silas Wilcox, County Surveyor of Stanislaus County, in the place of portions of the 16th and 36th sections of the townships corresponding to those of the selections, viz: No. 1 for N. W. quarter of section 36: Nos. 2 and 3 for section 36: No. 4 for section 36: No. 5 for S. E. quarter of section 16: No. 6 for S. half of section 36: No. 7 for S. half of section 36, which had been reported settled upon under pre-emption claims.

MERCED COUNTY.

Selection.	Township.	Range.	Section.	Subdivision.	Acres.
1	5 S.	13 E.	11	S. ½	320
“	“	“	12	S. ½	320
“	“	“	13	-	640
“	“	“	14	E. ½	320
“	“	“	14	N. W. ¼	160
“	“	“	15	N. E. ¼	160
2	7 S.	10 E.	8	-	640
“	“	“	9	-	640
“	“	“	10	-	640
3	7 S.	13 E.	21	-	640
4	7 S.	15 E.	22	E. ½	320
“	“	“	23	W. ½	320
“	“	“	27	-	640
“	“	“	28	-	640
5	8 S.	15 E.	14	S. W. ¼	160
“	“	“	15	S. ½	320
“	“	“	16	S. E. ¼	160
Total.....					7,040

- Selection No. 1. – On Merced River. Irrigation will cost 75 cents per acre making the land then worth \$15 per acre.
- “ No. 2. – On Merced River. Irrigation expensive. Land very fertile.
- “ No. 3. – On Bear Creek. Land very fertile. Value, \$3 per acre.
- “ No. 4. – On Chowchilla River. Land very fertile, if irrigated. Valued at \$2 per acre.
- “ No. 5. – On Mariposa River. Land very fertile; sparsely timbered. Valued at \$15 within one year.

The above selections have been made by Erastus Kelsey, County Surveyor of Merced County, and approved in this office.

The plats do not accompany this report, but have been transmitted to the Governor, as required by the Act.

Four hundred U. S. township plats, from the U. S. Surveyor-General's office, were received by my predecessor and partially copied. Twenty-seven additional ones have been received by me, and with the rest have been copied, in the office, on good drawing paper, to insure preservation and usefulness, and have been transmitted to the County Surveyors of those counties to which they respectively belong.

2. SCHOOL LAND WARRANTS.

Under the Act of the Legislature, "To provide for the sale of the 500,000 acres of land donated to the State of California for the support of the Common Schools," there have been located during the present year, sixty-nine warrants for 12,933.245 acres, up to January 1st, 1857, as is shown by the following

STATEMENT.

BUTTE COUNTY.

Nos. 424 and 789, for 160 acres each.

COLUSI COUNTY.

Nos. 392, 393, 258, 259, 426 and 427, for 160 acres each. Nos. 292 and 273, for 320 acres each.

Re-located. – Nos. 604 and 607, for 160 acres each.

KLAMATH COUNTY.

Nos. 247 and 677, of 160 acres each.

MONTEREY COUNTY.

No. 143, of 320 acres.

SAN BERNARDINO COUNTY.

Nos. 159 and 238, for 160 acres each.

SAN JOAQUIN COUNTY.

Nos. 317, 319, and 318, for 320 acres each. Nos. 776, 72, 454, 716 and 714, for 160 acres each.

SANTA CLARA COUNTY.

Nos. 113, 237, 47, and 277, of 320 acres each. Nos. 4, 446, 600 and 603, of 160 acres each.

Re-located. – No. 99, for 320 acres.

Re-located from Calaveras County. – Nos. 269 and 270, for 160 acres each.

Re-located from Monterey County. – Nos. 380 and 381, for 160 acres each.

SANTA CRUZ COUNTY.

Nos. 155 and 162, for 160 acres each.

Re-located on account of irregularity in the former locations. – Nos. 50, 365, 214, 215, 625 and 675, for 160 acres each.

SISKIYOU COUNTY.

No. 218 for 320 acres. Nos. 117 and 413, for 160 acres each.

SHASTA COUNTY.

Nos. 236 and 747, for 160 acres each.

SONOMA COUNTY.

No. 375, for 160 acres.

TEHAMA COUNTY.

Nos. 70, and 176, for 320 acres each.

YOLO COUNTY.

No. 27, for 320 acres. Nos. 750, 751, 731, 737, 753, 755, 756, 757, 735, 758, 726 and 736, for 160 acres each.

RECAPITULATION.

Counties.	No. of Surveys.	No. of Warrants.	No. of Acres.
Butte.....	1	2	320
Colusi.....	5	10	1,887
Klamath.....	1	2	319.750
Monterey.....	1	1	320
San Bernardino.....	2	2	320
San Joaquin.....	5	8	1,720
Santa Clara.....	13	13	2,880
Santa Cruz.....	4	8	1,229.095
Siskiyou.....	2	3	640
Shasta.....	1	2	257.400
Sonoma.....	1	1	160
Tehama.....	2	2	640
Yolo.....	6	13	2,240
Total.....	44	67	12,933.245-1000

Difficulties are constantly arising from the want of legal regulations for the registry of the floating, transfer, and re-location of the School Land Warrants. It often happens that survey returns of locations of warrants are made, when the register in this office shows the same to have been located in a different county and by a different person. The law should either prescribe some system, or authorize the Surveyor-General to issue instructions, whereby this conflict of title should be avoided. The evil is hardly felt now; but when the time arrives for the patent to issue, there may be twenty claimants for land, to the amount of 160 acres each, under one and the same warrant.

3. SWAMP AND OVERFLOWED LANDS.

As required by the Swamp Land Act, instructions were issued from this office to the different County Surveyors, similar to those in force under my predecessor, and were published for thirty days in the California American newspaper, in Sacramento. Special instructions in two cases were issued, where a departure from the general system of survey adopted by the Act was required.

Under these instructions, apart from those surveys, which have been rejected from non-compliance with the requisitions of the Act, there have been returned to me, up to the first of January, 1857, from sixteen counties, surveys according to the following

STATEMENT.

Counties.	No. Surveys.	No. Acres.
Alameda.....	10	1,125.04
Butte.....	15	3,722.40
Colusi.....	21	5,337.80
Contra Costa.....	22	3,323.72
Humboldt.....	9	2,000
Merced.....	20	3,017.19
Sacramento.....	105	25,827.75
San Francisco.....	11	2,410.98
San Joaquin.....	184	40,811.22
Santa Clara.....	3	709.17
Shasta.....	3	720
Solano.....	27	5,298.43
Stanislaus.....	59	5,957.63
Sutter.....	92	19,487.55
Tulare.....	52	6,312
Yolo.....	75	20,218.50
Total.....	708	146,279.38

In addition to the foregoing, the exterior lines of a tract of 17,500 acres were run by the County Surveyor of Sacramento, but being informally returned as a preliminary survey, it has not been approved or registered in this office. In San Joaquin County a tract of about 32,000 acres is being surveyed under special instructions, the returns of

which have not yet been received. Returns for about 5,000 acres, including informal returns sent back for correction, and disputed and conflicting claims, without being rejected are retained for further examination and a future report.

These swamp and overflowed lands, which I estimate at not less than 5,000,000 acres, constitute one of the greatest sources of wealth in the State, if properly developed and carefully legislated upon. When reclaimed, they will produce every variety of crops, with an abundant return for the labor of cultivation. Much difficulty is already experienced in the conflict of opinion concerning the rule of distinction between lands swamp and overflowed and lands not subject to overflow. The instructions from the Commissioner of the General Land Office do not settle the question.

The registers of the several land offices hold all lands as subject or not subject to private entry as United States Public Lands, upon the returns and maps of the United States Deputy Surveyor, who may have seen the land but once in a single season, and report thereon his unsupported opinion. On the other hand, the claimant for the State is required to prove by the affidavits of those who have well known the land, and by the Surveyor's return, if the same be swamp and subject to overflow, in the meaning of the law. To settle these increasing difficulties, and to save a large body of valuable land to the State, I would recommend that the State lands, and more especially those that are swamp and subject to overflow, be segregated from public lands of the United States. When this is completed, the State will be able to see her lands to settlers at low rates, and procure her speedy reclamation. Already upon the best of these lands, the settlers are far in advance of the State, and if speedy action be not had, this magnificent domain, apparently so valuable, will prove worthless, and the State in fact be made a sufferer.

I would recommend that the restriction of the sale of swamp lands within certain limits be stricken out, and if necessary, that the lands within those limits, if more valuable than others, be sold at a higher price, according to a properly graduated scale.

I would also recommend that the power of the Surveyor-General to issued instructions for a system of survey varying where necessary from the system of United States Public Land Surveys be more properly defined. The devising of a judicious system of survey of these lands is one of the most difficult engineering problems in the State, and a segregation of the State lands is one of the first and necessary steps to be taken thereto.

Since writing the foregoing, and as I was about to close my report, I have received from your Excellency, a copy of your annual message, in which I find a letter from Thos. A. Hendricks, Commissioner of the General Land Office at Washington, wherein it is stated, that, "The question of cultivation has been carefully examined, and we have long since decided, that, to place the land without the purview of the Act, it is not necessary for the cultivation to be in grain." And again, "It was not the design of Congress to grant to the States those rich prairie meadows where crops of grass may be cultivated and harvested, hay being regarded as much a staple production as wheat

or corn.” This is the first official information received by this office of any changes in the rule of determination as to the character of swamp and overflowed lands.

To show that this rule has not been “long since decided,” I quote from my instructions, as ordered by the Act, to the County Surveyors for the survey of swamp and overflowed lands – the action of the predecessor of the Commissioner hand his rule of judging the character of these lands:

“It is believed that hundreds of thousands, perhaps millions of acres of the best lands in the State, which have been donated to her as swamp and overflowed lands, will be disposed of by the General Government, unless reliable evidence shall be obtained and presented by the State to prevent the same.

“I would respectfully request particular attention to the following remarks of the Commissioner of the General Land Office. He said that ‘all lands which from being swampy or subject to overflow,’ are unfit for cultivation, and ‘all lands which though dry part of the year, are subject to inundation at the planting, growing or harvesting season, so as to destroy the crop, and therefore are unfit for cultivation, taking the average season for a reasonable number of years as the rule of determination,’ are to be considered as granted to the State.

“He also said the United States ‘Surveyor-General is authorized to receive such reliable evidence of the character of any of these lands as may be presented by the authorities of the State; and as many of the lands were surveyed at the dry seasons, and hence are not represented by the descriptive notes or plats as being of that character, I have supposed it a matter of sufficient importance to induce you to call upon the County Surveyors or other respectable persons of your State, for statements under oath in relation to the swamp or overflowed lands in their respective counties.’

“He also says: ‘Such testimony will be considered as establishing the facts in the case, etc.’

“Section 3 of the Act of September 28th, 1850, requires ‘That in making our lists or plats of the lands aforesaid, all the legal subdivisions, the greater part of which is wet and unfit for cultivation, shall be included in said lists and plats, but when the greater part of a subdivision is not of that character, the whole of it shall be excluded therefrom.’

“All the subdivisions upon the township plats are ‘legal.’

“The United States Surveyor-General says the ‘smallest legal subdivision’ is ‘forty acres, or a smaller amount when so returned upon the plat.’

“I am of opinion that testimony will be required as to the character of each and every quarter, quarter-section, or forty acre lot, and that any such lot is a ‘legal subdivision,’ (except where a smaller quantity is returned on the United States township plats,) to which the State is entitled when the ‘greater part is wet and unfit for cultivation,’ or subject to inundation at the planting, growing or harvesting season, etc., as described above.”

If grass or any other spontaneous product of the soil, which may be used for feed for cattle, or which, by the application of manufacturing power, aided by scientific research, may become the source of wealth and industrial employment, is to be considered a “crop,” then is the State of California entirely shut out from the benefits of the Act of Congress of 1850 donating these lands, and the supposed munificent gift of

the Government is more than worthless, in that it has induced settlement and moneyed outlay, to produce, in the future, difficulty and vexatious litigation. It is well known the tules are extensively used in the dry seasons for food by cattle, and swine fatten in them better than elsewhere. It is also demonstrated that the manufacture of paper from tule can be carried on upon the most extensive scale, and, were labor cheaper, at a handsome profit.

Besides, to make these lands valuable, reclamation is necessary, else, at certain seasons only can they be used; although the very overflow itself is the cause of the production of this natural "crop."

In their reports upon these lands, the U. S. Deputy Surveyors take neither affidavits nor evidence from those who have long and well understood their character; but upon some certain day in the year they see them perchance either wet or comparatively dry, (and that but once in their lives) and thereon decide to throw out or report them as part of the U. S. public domain.

In other States, the State authorities have ever been consulted and listened to in this matter, and where the same care has been shown, as is exhibited in California, the State selections supported by affidavits and strong proofs have ever been acknowledged to be correctly made.

This subject is one of vital importance to the State, and especially to those of her citizens, who, as innocent purchasers have been induced to settlement and expense by the Swamp Land Act, and I recommend it to the earnest attention of the Legislature at its present session.

II. IMMIGRANT WAGON ROAD.

1. The Act of the Legislature of 1855, entitled, "An Act to provide for the survey and construction of a Wagon Road over the Sierra Nevada Mountains," required the Surveyor-General to cause such road to be surveyed, and in company with the Governor and Controller of State, to locate and construct the same. Under that Act, a location of a route via Placerville and Luther's Pass, to Carson Valley, was selected, and a survey made thereof by order of my predecessor.

Difficulties having arisen in the way of a completion of the duties of the Board of Commissioners under the Act, it devolved upon the successors of those officers to proceed in the work. Before any action could be taken therein by the present board, a bill in equity was filed in the District Court of the Sixth Judicial District by W. T. Wallace, Esq., Attorney-General, against J. Neely Johnson, Governor, John A. Brewster, Surveyor-General, and David F. Douglass, Secretary of State, the existing Board of Road Commissioners, to enjoin said Commissioners from entering into any contract for the construction of said road, for the reason that the Act empowering said Board is unconstitutional and void. The decision of the District Court was appealed from, and the appeal filed in the Supreme Court on the 15th of July, 1856, and the decision of the Supreme Court was rendered on the 8th day of December, 1856, declaring the said Act creating and empowering the said Board of Commissioners to be unconstitutional and void.

No steps have been taken by this office, or by the Board under the Act, except in defending the above suit, and the entire question of the construction of an Immigrant

Wagon Road over the Sierra Nevada, remains as unsettled as it did two years since, save in the increased proof of its immediate necessity.

The interest that has been of late specifically exhibited in the construction of one or more roads over the mountains, and the increase of information in regard to various routes in different sections of the State will doubtless induce the Legislature, at its present session, to pass a bill for this purpose, freed from the Constitutional objections which militated against the Act of 1855.

If an act of such a character shall become a law, it will be necessary to relocate the road, either by the route selected by the former Commissioners or by some other equally good.

Without expressing a preference for any location, I would respectfully call your attention to the information received from various portions of the State recommending their several routes.

And it is a grave question whether several roads, located in different sections, are not required for the growing wants of the settlers therein, rather than one single road, through which the whole immigration would be forced to come, at probably an increase of time and expense in reaching its destination. On the 14th March, 1856, Hon. Sherman Day introduced a bill into the Senate for an Act to provide for the construction of five such roads: First, From Battle Creek, by Noble's and Fredonyer's Passes, and Honey Lake Valley, to Eastern boundary of the State. Second. From Forest City along or near the line of D. B. Scott, Esq's. survey in October and November, 1855. Third. From Placerville by South Fork of American River, Henderson's and Luther's Passes to Carson Canon, as surveyed by Day and Arnold from October, 1855, to January, 1856. Fourth. From the Big Trees in Calaveras County, by Grizzly Bear Valley, Summit Lakes, and Hope Valley, to Carson Canon. Fifth. From the Cajon Pass in San Bernardino County, by the old trail to the Vegas de Santa Clara to the Eastern boundary. Sixth. To provide for boring a series of artesian wells along the road from San Felipe Canon to Fort Yuma on the Colorado. For performing the work of survey, location, and construction of said several roads and wells, it was proposed to appropriate sums not to exceed in amount:

For the first.....	\$20,000
For the second.....	60,000
For the third.....	100,000
For the fourth.....	40,000
For the fifth.....	20,000
For the sixth.....	20,000

I would recommend that an act, similar in its character, should be passed, with such changes of direction and estimated expenses as the increased knowledge of the different routes and mountain passes shall show to be proper. I also recommended the survey and location of a road from the town of Petaluma, in Sonoma County, passing through Santa Rosa and Russian River Valleys to the head waters of Russian and Eel Rivers, and thence with Eel River to Humboldt Bay. Increased facilities for communication between the Northern part of the State and San Francisco, such as this road would afford, are greatly needed. The country along the route is a succession of

extensive and fertile valleys and finely timbered tracts, while minerals of a valuable character abound. The country would soon be thickly settled with a permanent population, and the increase of valuable taxable property would make ample return to the state for the cost of the road and the development of the natural resources of this district. For this purpose, I recommend an appropriation of \$20,000.

Herewith are submitted notes of Reconnaissance of the Calaveras and Sierra County routes, over the Sierra Nevada, made during the past summer by myself, and attention is directed to the reports of Messrs. Goddard and Chapman, of a similar character, in the appendix.

2. NOTES OF A RECONNAISSANCE OF THE DOWNIEVILLE ROUTE OVER THE SIERRA NEVADA, MADE IN AUGUST, 1856, BY JOHN A. BREWSTER, SURVEYOR GENERAL OF CALIFORNIA.

Having been invited, by certain public spirited citizens of Downieville, to examine their route for an Immigrant Road, I left that place for Sierra Valley on the 17th of August, 1856. The party accompanying me, consisted of Messrs. A. P. Chapman, W. D. Noland, J. J. Bramely, E. Cady, Sol. Purdy, J. H. Craycroft, J. Charleton, Jos. Sargent, and J. McMurtrie, with well provided pack animals.

Traveling N. E., up the East fork of the North Yuba, for four miles, by an easy graded trail, we turned due East, and, at twelve miles, crossed the summit of the Butte ridge, which is a part of the main ridge of the Sierras. The crossing here, has an elevation of 1,300 feet above Downieville. Bending North for a mile, to avoid the Buttes, which are a rugged mass of conglomerate rock and volcanic debris, with so bold an outline and so great altitude as to be the landmark of this section, we traveled due East, over a succession of little valleys and low ridges covered with timber and interspersed with small lakes, to the East branch of the South fork of the North Yuba. Thence eastward, up this branch and descending gradually, we crossed a low ridge at its head, and entered Sierra Valley at Chapman's Ranch. This point is twenty-four miles from Downieville, and is 1,100 feet lower than the Butte ridge crossing. The proposed road route, after leaving Downieville, instead of following the ridge that I traveled, runs up the North side of the South fork of the North Yuba, by way of New York and Kanaka Flats, and Sierra City, with an easy grade, until it passes the buttes on their Southern side, and thence, on by the East branch, as above, and through Chapman's Pass, into Sierra Valley. By this route, the ascent and irregularities of the ridge are avoided, as well as any deep fall of snow to impede the travel in winter.

Sierra valley is a large and level plain, about forty miles long and ten miles wide, lying nearly north and south. It is covered with nutritious grass, and abounds with springs of fresh and mineral waters; some of the latter are of high temperature and medicinal virtue. Its northern, southern, and western sides, are enclosed by hills clothed with fine oak and pine timber. In its center, is collected, in winter, a large body of water, out of which, flow the heads of the Middle Feather river. Mohawk and Lake Valleys, adjoin it on the north-west, and may be considered as its branches. They are of considerable extent and of equally valuable character. The Beckwourth pass and old Trading Post, lie near the northeast extremity.

After leaving Chapman's, a canter Northward for twenty-three miles over the open plain, - a better road than is found in most of the foot-hills of the Sacramento Valley - brought us to the Divide and Pass, which is almost on a level with the valley.

Thence east, descending on an easy slope for seven miles, we came to Grass Spring, in Long Valley, where are good grass and water. The waters of this valley run north, into Pyramid Lake, and may afford a good road to the desert. Thence southeast, for three miles, and then east, over a rolling country, for six miles farther, we came to Pea-vine Spring, which is about 100 feet higher than the Pass. Here the wild sage region begins, the hills being covered with its scattered growth, while a little grass is found in the hollows. We here passed parties of Indians, over 350 in number, belonging to two different tribes, who had been holding a "grand talk," to settle some disputes about their hunting grounds; and their council having broken up, they were now on their way to their autumnal haunts. A few had horses, on which the happy possessors pranced in great state, while the squaws and half grown children, dragged after them the lodge-poles, on which were fastened their household gear, and in some instances, a papoose, whose glittering eyes shone out in wonderment amid the confused mass of Indian baggage.

Nine miles farther, over a bare rolling upland, with volcanic debris scattered thickly around, and crossing the beds of three alkaline lakes, whose now dry beds glistened like snow in the sun-rays, we reached the edge of the Truckee River valley; then leaving the sand and wild sage, which had annoyed us for the last two miles, we crossed the valley for five miles to the edge of the river, which is here about eighty yards wide, confined between abrupt banks fifteen feet high and bordered with willow thickets.

This portion of the valley is known as the Big Meadows, extending five miles along the river, with a width of from four to five miles, in which is an abundance of nutritious grass and good water, and at this season enjoys a delightful climate. A number of immigrant trains were camped throughout this valley, and their cattle, dotting the plain, reminded one of an older and settled region. About four miles to the southeast, we were informed, was an incipient Mormon village, whither some of our party were invited to a *ball*. We here first obtained some of the fine salmon trout of the river. Proceeding down the river (crossing it several times, to avoid the sharp points of volcanic ridge-spurs which jut close upon the stream,) with a gentle and uniform descent, in a course nearly directly east, for twenty-six miles, we reached the lower crossing and the road which comes in here across the Desert, from the Sink of the Humboldt, distant from this crossing thirty-eight miles. The river here bends sharply to the left, and running north for twenty-two miles, empties into Pyramid Lake. Crossing to the right bank or desert side, we moved down the river, over barren desert bluffs of hard sand and volcanic rock, covered with wild sage, and a few patches of white bunch grass. The river lies two hundred feet below, and the bluffs are close on the river, with an occasional expansion into handsome little valleys, having fine grass and cottonwood and oak trees; one of these, at the mouth of the river, extending for five miles with as fine grass and handsome trees as ever met the eye of the immigrant. The river has two mouths; one branch turning abruptly off, within three hundred yards of Pyramid Lake, and running in a semi-circle to the S. E. and N. E., at five miles empties into Mud Lake, which lies to the northeast of Pyramid. The Pyramid Lake is about forty miles in length and fifteen in breadth, containing the singular rock which has given it its name. It is surrounded by high mountains on the northern and western sides. On the east stretches the barren desert waste, and on the south the river comes in, passing a low ridge of volcanic spar. I had no opportunity to go out on the lake and examine its

waters, but along the shore the water was alkaline and of an offensive fetid odor, leaving a broad and thick deposit as tough as felt. Several Indians were camped here in the sand, living on the fine trout of the river, which they are experts in catching, and having an occasional chase of the big-horn sheep. From this river mouth a good road could be made direct to the Big Meadows, where we first reached the river valley; and from this point east to the Sink of the Humboldt, or some point higher up that river, whereby much of the desert travel and not less than thirty-five miles of distance can be saved.

After one day's rest in this handsome spot, with the enjoyments of fine fish and game, we retraced our trail to the Big Meadows. Thence, leaving the Beckwourth Pass to the right, we continued up the river to the upper crossing on the old Truckee route. The river running through narrow canons here bends south. After crossing twice, we left it, passing over a low rocky ridge, and at five miles crossed Dog Valley. Ascending westward for four miles, we reached the first summit, here covered with a dense pine forest. Two miles further on we came to the forks of the Hennes and old Nevada roads. Bending to the northwest for four miles, we made a noon camp in Clover Valley, which is full of fine grass and water; thence, north, sixteen miles brought us into the south end of Sierra valley at the hot sulphur springs, in which the party enjoyed a delightful and invigorating bath. The temperature of these springs, is from 103° to 114° Fahrenheit, and they have proved in a few cases of great medicinal power.

The next day, the party returned to Chapman's rancho and thence to Downieville.

On this route, from the Butte ridge eastward, there is little or no work necessary; the grade in no place needing to exceed four degrees. It is in many places a good buggy road at present. From the Butte westward, a grade of five degrees should suffice to make the road of a superior quality. Here, however, for a few miles some heavy work will be required. Rock and timber for construction are abundant and convenient where needed; and the grass and water are amply sufficient in quantity and quality. Of the state of the snow on the mountain in winter, I am unable to speak with certainty; but from the lowness and sheltered character of the Pass, I should consider it with favor even for a winter road. It is well worthy the attention of the Legislature.

The main chain of the mountains, crossed on this route, is the same called the Gibsonville Range by Mr. Goddard, Civil Engineer, to whose report and that of Mr. Chapman, to be found in the Appendix, reference is made for further information.

3. NOTES OF A TRIP OVER THE CALAVERAS ROUTE TO CARSON VALLEY, MADE IN OCTOBER, 1856, BY JOHN A. BREWSTER, SURVEYOR-GENERAL.

Having been offered by the kindness and public spirit of certain citizens of Mokelumne Hill, a party for the exploration and reconnaissance of the road over the mountains through Calaveras county, I started in company with Messrs. B. S. Lippincott, H. Atwood, L. C. Root, Dr. Cozine, Geo. S. Anderson, and R. Saunders, of that place, attended by Pancho and Pedro, two Mexican servants, on Tuesday, September 30th, from Mokelumne Hill, and traveling northeastward up the main Mokelumne river, by way of Rich Gulch, Pleasant Springs, and Sandy Gulch, halted for the night at West Point, to let the pack-animals come up. We passed over a good road all the way, on which stages are daily running, and along the line of which miners are constantly at work. Saw-mills and quartz-mills are also in operation, finding ample remuneration for their

labor. At West Point we found Dr. Davis, of San Francisco, who, with Ex-Lieut. Gov. Purdy, and many other gentlemen are engaged in developing the resources of this section, believed by them to be one of the richest quartz regions in the State. The quartz is found in ledges running in every direction, in many cases defying calculation as to the supposed dip and course. Near the surface, the sulphurets, which abound in an extraordinary degree, have become decomposed, and the quartz, that is taken from the leads, is thereby rendered easily capable of being worked at small expense with the common mud arastras, and small water wheels, while it affords an almost fabulous return for the labor and capital employed. The village of West Point has but lately sprung into existence and is the frontier settlement of this section of the State, yet it seems destined to become the center of one of the most extensive and lucrative quartz fields now occupied.

On the next day, our pack animals having arrived, we started at mid-day for the real no road country. Crossing the middle fork of the Mokelumne and Scull Flat, we ascended the dividing ridge between the middle and North Forks of the Mokelumne, at an easy grade for loaded wagons, and still moving northeastward, at twenty-two miles intersected the trail leading to the Big Trees and Murphy's. The ridge to this point rises slightly, and is covered with pine, oak, and a few cedars, having fine grass, and good water on either side. It is a spur of the main divide of the Sierras, and can be followed to the summit. Here turning to the northward, we crossed a low, narrow, and thickly timbered spur of the divide between the waters of the Stanislaus and the Mokelumne, and proceeded along the side of the ridge on the North Fork of the Stanislaus, crossing several brooks and hollows to Grizzly Bear Valley, a distance of twelve miles – good grass and water all the way. The timber is pine, but stunted and meager. Many granite boulders crop out along the road, and the creek beds are all rocky. The general direction of Bear Valley is north and south, about five miles across, and covered with fine grass. Several emigrant teams were here encamped recruiting their stock on the rich herbage.

Turning N. N. W., and crossing a small round valley, with a central lake, which (the valley not the lake) is called by the high sounding name of Picken's Bill Williamson's Race Course, and is lying on a level with the top of the ridge, we followed the divide between the Middle and North Forks of the Stanislaus, along its southern slope, traversing the heads of several small streams which run into the Middle Fork, and at five miles crossed the head or north end of Stanislaus Valley. This is one of the handsomest valleys we had seen – the herbage the beautiful pine growth, and disposition of the rocks, made it a scene worthy the pencil of an artist. The Middle Fork of the Stanislaus rises here, and flows southward through the level meadow. About three miles from this, we found a ledge of slate, containing traces of several ores, running northwest and southeast, also a number of quartz croppings in every direction. Proceeding forth-easterwardly up the canon of Stanislaus Valley, we crossed a saddle of the ridge, where is a small lake and from which point the South Fork of the Mokelumne had a branch of the Stanislaus take their rise. Winding along the ridge northwardly, we descended to the South branch of the North Fork of the Mokelumne, (which here runs due north,) in a canon, heading southeast, with fine bunch grass, young cedar, and spruce. Thence over a broken country, in which many streams head, with rocky beds and scattered timber, bending for six miles to the northwest, we gained

the divide of the Sierras and the Summit Lakes. These lakes are deserving of special mention, forming, as they do, a portion of a system of natural reservoirs to be found throughout this entire summit range, from which the heads of all the streams of rivers running into the Great Basin, as well as into the Pacific, flow. Appearing to have no surface outlet except in the wet season, these reservoirs contain a vast body of water, which can, with but little expense, be made to supply the rapidly increasing wants of the agricultural and auriferous region below, to which enterprise and capital will soon direct their outflow.

From the intersection of the Big Tree road to this point, most of the formation has been of secondary rock and conglomerate, with many outcroppings of granite and quartz. The varied outline of the ridges, is at times exceedingly wild and picturesque, with plenty of room for the play of the imagination in its fanciful and changing forms.

From these lakes, we began descending along Carson river waters for ten miles, by an easy grade, through a heavily timbered cañon into the head of Hope Valley, passing through two small valleys and heading a fork of Carson river. The course of this fork would afford a shorter route, but the cañon through which it passes, is impracticable. Proceeding northeast, down Hope Valley, we passed the Placerville road of Mr. Goddard's line of survey, and Johnson's Cut-off, to the head of Carson canon. Thence the road runs eastward down Carson cañon to the main valley of Carson river.

Hope Valley is about eleven miles in length, and from two to three in width. It contains an abundance of fine grass and water, - having a growth of willows and some cottonwoods on the streams, and the hillsides covered with timber scattered among broken rocks. We here obtained some fine trout from the Canon creek. In this valley, about five miles from the head of the canon, there are to be found many traces of copper ore. Some twenty veins are to be discovered, running parallel to each other in a northwest and southeast direction. One has been opened for a few feet. It lies about 300 feet above the level of the valley, on the south-west slope of the hill. It is 18 inches wide, has a dip of 45°, and appears to be valuable. A rough assay showed 40 per cent copper, 10 per cent silver, and 3 per cent gold, and a value per ton of \$200. The hill, in which the vein has been opened, is a low and narrow divide of two forks of Hope Valley, and runs north and south. It is very rocky and heavily timbered, and runs out into the valley about a mile and a half north of the opened vein. About a quarter of a mile to the eastward, this vein runs out into an upright ledge of granite, but is can be easily traced northwestward into the main mountain for three miles. The character of this, and other contiguous veins, indicate that they are merely feeders of the mother vein; and, it is to be believed, that when that is found, it will prove to be exceedingly rich and valuable in ore, if not in native copper, affording a handsome remuneration for the investment of mining capital.

On our return upon the road line, after arriving at the point of intersection of the ridge which we followed from West Point with the Big Trees trail, we continued by this road to the Big Trees, fifteen miles, and thence back to the Mokelumne Hill, remaining one night in the Grove. These giants of the forest have been so often and so well described, that I will not add anything here concerning them, except to refer to the strange blunder of those botanists who have classed them among the *Taxodiums*, they being, instead, of the real *Coniferae* and of the genera of the Cypress – the *cupressinae verae*. The cone is about two inches in length and of the form of an ovate spheroid.

For ten miles on either side of the Grove the road runs through the handsomest forest in California.

The intermediate distances are reported as follows:

From Mokelumne Hill –	
To West Point.....	15 miles.
Crossing Middle Fork Mokelumne and Scull Flat.....	2 miles.
Saunders' Rancho.....	3 miles.
Grass Spring.....	5 miles.
Intersection Big Trees Road.....	12 miles.
Divide between Stanislaus and Mokelumne.....	4 miles.
North Fork Stanislaus.....	1 mile.
Grizzly Bear Valley.....	7 miles.
Main Ridge at head of Stanislaus Valley.....	5 miles.
Across cañon and rocky ridges to Summit of Sierras and Lakes.....	11 miles.
Hope Valley Head.....	4 miles.
Placerville Road.....	7 miles.
Head of Carson Canon.....	2 miles.
From Intersection to Big Trees Grove.....	16 miles.
From Big Trees Grove to Murphy's.....	15 miles.

This would make the distance from the Big Trees to the head of Carson Canon, 57 miles. The grade is gradual and very easy. The Pass is one of the lowest in the mountains. Water, grass and timber are abundant, and of an excellent quality. A number of emigrants passed over the road at our suggestion, some going into Murphy's, others to West Point; and all agreed in praise of it. A number of observations were taken on the route with an aneroid barometer, but finding on my return, after careful comparisons, that the instrument was not to be relied upon for accuracy, I have omitted the table, referring to other sources for determination of altitudes. This route I can recommend as one worthy of most favorable attention for the location of a road, at small expense, and with great benefit to the immigration into the State.

III. COUNTY ROADS.

Much complaint has been made of the inefficiency of the Act concerning Roads and Highways, to procure the proper amount of necessary improvement on the county thoroughfares. The County Surveyors should be made Road Commissioners, and be required to be skillful and competent men in their profession, and the road-tax, both poll and property, should be much larger than at present. Citizens are more ready to pay taxes for means of easy intercommunication than for any other purpose, and in the present state of California travel, a pressing necessity exists for the adoption of some good road system. That recommended by my predecessor is one worthy of adoption, and that or some one similar is endorsed by the different County Surveyors. This

important subject appeals to the interest of every class of our citizens, and I recommend that a careful examination and action upon it be made by the Legislature.

IV. COUNTY BOUNDARIES.

1. SURVEYS UNDER SPECIAL ACTS.

SANTA CRUZ, SANTA CLARA, AND SAN FRANCISCO.

Returns of map and field notes received January 23rd, 1856. This survey was made by Thos. W. Wright, County Surveyor, of Santa Cruz County, under appointment and instructions from my predecessor, and was noticed in his report. The returns were filed in my office, and the accounts of Mr. Wright returned to him for the proper vouchers to be attached. These were subsequently received and transferred by me to the care of the Assemblymen from Santa Cruz and Santa Clara, by whom they were referred to the Committee on Claims, in the Assembly of 1855. Since then, I have heard nothing from Mr. Wright, or the accounts.

SONOMA AND MARIN.

Act of Legislature, approved February 23rd, 1856. Appointment and instructions issued March 18th, 1856, to Wm. Mock, County Surveyor of Sonoma County. Survey made. Map and field notes received August 11th, 1856. Accounts received and herewith transmitted, \$754.92.

FREZNO.

Act of Legislature approved April 19th, 1856. Survey made under order of Board of Supervisors. Field notes received October 8th, 1856, from Wm. W. Bourland, County Surveyor. No accounts received. No claim against the State.

2. SURVEYS UNDER THE GENERAL ACT – AUTHORIZED UNDER CALLS FROM COUNTY AUTHORITIES.

STANISLAUS AND MERCED.

Application from Board of Supervisors of Stanislaus Co. received February 11, 1856. Appointment and instructions issued February 11, 1856, to Silas Wilcox, County Surveyor of Stanislaus Co. Survey made. Plat and field notes received April 3, 1856. Accounts to be vouched for and transmitted to the Legislature when received.

ALAMEDA, SAN JOAQUIN AND SANTA CLARA.

Applications received from Boards of Supervisors of Alameda Co. July 7, 1856, of Santa Clara Co. July 9, 1856, and of San Joaquin Co. August 7, 1856. A correspondence had for some time been had by me with the several counties, about their adjoining boundaries. Appointments and instructions for joint work upon the common boundaries of the several counties issued to H. A. Higley, County Surveyor of

Alameda Co., L. B. Healy, County Surveyor of Santa Clara Co., and Geo. E. Drew, County Surveyor of San Joaquin Co., September 1, 1856. Appointment not accepted by Geo. E. Drew. The other surveyors are still engaged upon the work, and no returns have yet been received.

SOLANO AND YOLO.

Application from Board of Supervisors of Solano Co. received November 26, 1856. Appointment and instructions issued November 28, 1856, to E. A. d'Hemecourt, Deputy Surveyor of Solano Co. Appointment accepted. No returns received.

TEHAMA AND COLUSI.

Application from Board of Supervisors of Tehama County for a correspondence upon the survey of the boundary between Tehama and Colusi Counties received July 3, 1856. Answered by asking for an order from the board calling for the survey. No further action has been taken.

EL DORADO AND SACRAMENTO.

A correspondence was begun upon this subject by a letter from Robt. E. Draper, of the Board of Supervisors of El Dorado county, claiming that an error existed in the settlement of the termini of the line, to which I replied, "that the reported survey and map made under my predecessor were definitive, until legislative action should be taken to alter them."

BUTTE AND SUTTER.

Field notes and plat of dividing line, as surveyed by J. W. Scott, County Surveyor of Butte county, under order of Board of Supervisors of Butte county, received February 12th, 1856. No accounts received and no claim against the State.

MARIPOSA.

Map of lines between Mariposa and Merced, and between Mariposa and Fresno, with sketch of Mariposa county, made by Thomas W. Long, County Surveyor of Mariposa county, by order of the Board of Supervisors, received December 26th, 1856. No accounts and no charge against the State.

ERRORS IN COUNTY BOUNDARIES.

The subject of the defects in the present boundaries of many of the counties is one of very great importance. In some instances it is impossible to determine the lines at all. Arbitrary lines should be made away with and natural boundaries or the lines of the United States Public Land Surveys adopted in their stead. Difficulties are constantly rising as to the several county jurisdictions. Assessors, Sheriffs and Courts are prevented from acting by the uncertainty of the true lines of territorial divisions. Great complaint is made on all sides, and the matter calls imperatively for speedy legislative

action. The reports of the Assessors and Surveyors, (to which reference is here made for more particular information,) call attention more especially to the errors in the lines between the counties of Placer and Sacramento; of the west line of Nevada; of the south line of Contra Costa; and Sacramento; of the west line of Nevada; of the south line of Contra Costa; of the entire boundary of Plumas; of the entire boundary of Colusi; of the lines between Sierra and Plumas; of the lines between San Joaquin and Calaveras, and of the lines separating the counties of Butte, Plumas, Yuba, Sutter and Colusi. All of these are represented to be indefinite, and objectionable, and pregnant with harm to the several counties.

A set of alterations in the boundaries of several counties to avoid ambiguity was recommended by my predecessor, which recommendation I heartily endorse.

V. EASTERN BOUNDARY.

The necessity for speedy action in defining the Eastern Boundary of the State is daily becoming more apparent. Difficulties are constantly arising in several of the border counties in regard to the assessment and collection of taxes. Along the line lie several large and fertile valleys into which the tide of emigration is directed, and there, an account of the richness of the soil, the luxuriant growth of natural grasses, and other inducements to settlement, farms and even villages are springing up, which will soon vie with many upon the Western Slope. Much difference of opinion exists as to the true jurisdiction of the Courts, whether of Utah or California. As a large taxable property is there accumulating, and the varied business interests of the settlers bind them closely to our State, entirely apart from the consideration of the benefit to our stock of geographical knowledge and to the preparation of the State map, I desire to call attention to the propriety of making appropriations for the work of surveying and determining the boundary line. In connection, herewith, I would direct notice to the remarks of the County Surveyor of Placer on the subject.

VI. STATE MAP.

The existing official map of the State is a broad burlesque upon the topography of California. No mortal foot has ever trodden over roads delineated upon it, and the directions of mountain chains and river courses, as there laid down, are most admirable calculated to answer the purpose of an ignis-fatuus to delude the benighted traveler, who should ever trust to their guidance. Lakes are placed where the thirsty soil rarely sucks a drop of water, and fertile plains appear where only barren deserts stretch their broad expanse. It is a disgrace and a reproach to the State, and should be replaced at once by a map conforming to the true character of the country. By private means a mass of valuable geographical information has been collected; and from the various sources of which it is easy for the state to avail herself, a map correct in detail, with a true delineation of county lines, river courses, mountain ranges, roads, mining canals, positions of towns, etc., can be collated at a comparatively small expense. Such a map made in the *original*, upon a scale admitting of additions, as from time to time increased geographical knowledge will render necessary, should be on file in the Surveyor General's Office, from which, if ever deemed necessary, publication could be made. An

official map is supposed to be final evidence of county boundaries, and other geographical and topographical truths by which State or county interests can be affected – in the determination of election contests, for example, where the returns from a single precinct (as has been the case) may decide for or against the right to his seat of a Senator or an Assemblyman. The State should possess a correct map in the *original*, and not be at the mercy of any unauthorized publication. But such an undertaking, if begun, should be upon a scale of expenditure and performance worthy of the State and the value of the work. From time to time, subsequent Legislatures can appropriate sums for the prosecution of the labor on the map to its completion. In New York, Massachusetts, Pennsylvania, and other States, years of labor have been bestowed upon similar works, and it behooves California, who has a greater immediate interest in the development of truthful and reliable information concerning the topography of her territory, to take prompt and effective measures to secure the commencement of a correct State map. I would recommend the appropriation of \$5,000 for that purposed.

VII. INTERNAL IMPROVEMENTS.

The Surveyor General is required, by law, to report any suggestions or information in his power upon required public improvements, either by a general system for the State, or upon special matters affecting particular localities.

Much of such information in practical detail, must be obtained from the County Surveyors and qualified Engineers, familiar with the requirements of the country. No such information has been received, and I am only able to refer to two or three subjects under this head, which have been the subjects of my personal attention.

The First, a system of railways connecting the extremes of the valley portion of the State and the larger cities which are the points of distribution of population and commerce. The only road now in operation, is the one from Sacramento to Folsom, but others are in contemplation between Sacramento, Benicia, and Marysville, Stockton and Oakland. No State affords greater facilities for internal railway communication than California, and the enterprise of her citizens will soon comply with the demands of traffic and travel for a speedy and safe transit between her distant extremities. I am not able to give correct details of the railways in operation and projection, beyond those contained in the appendix, and the reports of Engineers to which reference is made, no suggestions for any State action being now deemed necessary.

The Second, is the means of supplying the amount of water so greatly needed by both the mining and agricultural districts. In the agricultural sections, the digging of artesian wells has been resorted to upon the wide and arid plains with abundant success in some counties, while in others, the wells have proved a total failure. These failures, however, would seem to arise more from the want of sufficient depth. In many cases the supply at first obtained, appeared amply sufficient, but, after a few months, became exhausted, evidently having had but a temporary reservoir for a head. Careful geological examination, has as yet failed to determine the cause. In the mining region, the digging of these wells has not yet been properly tested, and its practicability is much doubted. My own convictions, that the creation of large tanks or reservoirs, in which to collect the vast amount of water which is obtained in the wet season from the rains and

the melting of snows of spring, is required for the mines and the farms. This system is the one adopted in India and Syria. Around all the arable and cultivated valleys, are hills in whose bosom lie hollows and lakelets whose waters can be easily retained in the summer. In the Sierra Nevada, from one end to the other, is a system of lakes and springs out of which the heads of the various rivers flow. The many hollows of the mountains collect vast amounts of snow, which, when melted, pour over the sides of the ridges and flowing down the swollen streams are soon lost forever. These hollows and lakes could be dammed up, and the water therein conducted from one to the other, descending in scale to the valleys and mining gulches, making a set of reservoirs sufficient to supply the wants of a larger population than California now has. The experiment has been fairly tested in the hot and dry climates of Southern Asia and Northern Africa, and amends itself to the consideration of this State.

The Third is the reclamation of the Swamp and Overflowed Lands. The importance of this subject is growing daily in the minds of all reflecting citizens; and as the origin and conduct of a general system of reclamation is now within our power, it is proper that great care should be exercised before the State commits herself to any undertaking for the purpose. Nothing is more necessary to this end than a correct conception of the geological formation and peculiar topography of that portion of the State immediately affected by the overflow. No one, who has given care to the investigation of the subject can doubt, that the whole of the valley watered by the Sacramento and San Joaquin rivers was submerged at some remote period of the world's history, and that the delta at their mouths, and the vast body of swamp lands on either side of their present channels, were formed by accretions of matter swept down from the more primitive formations above and deposited below. This is proved by the substances, both animal and vegetable, which have been discovered at various depths below the present surface, and the deposits brought up from the artesian wells. The natural action of the waters, by bringing down the heavier particles and gradually depositing them on the edge of the current, has created the natural levees on these streams, increasing at every overflow, until now the land on the bank of the river is higher than that at right angles back. This process will be continued by nature, if not interfered with, until in process of time the overflows, in obedience to the laws of alluvion formation, will have diffused the earth held in solution in the rivers over the whole back country. This is the case on the Mississippi, the Nile, the Po, the Ganges, and other rivers. In the basin formed by the natural levee of the streams and the high grounds to the rear, lie these vast bodies of swamp lands. The original body of water contained in them is constantly fed by the annual overflows, the back water of the sloughs connecting with rivers, the fresh water streams which flow into the tules and the constant absorption through the porous soil. As the present natural levees retain the water of the swamps from outflow, it would seem a natural conclusion that by unequally hastening the natural process of deposit and elevation of the surface by the building of levees on the immediate bank only, we would effectually cut off the outpourings of the redundant waters in the rear, and create a dismal swamp replete with pestilence and evil. This error was discovered all too late for Louisiana, and the entire profession of Engineers has been long and actively engaged in devising for mitigating the evil. It may not be safe, or is it suggested, to reject the dyking system entirely, for some points may be lower than the general level, (as is the case particularly in the San Joaquin valley,)

and there slight levees are useful; but it is in general a hazardous and dangerous plan. If, then, such a system is to be rejected in planning the improvement of the swamp lands, it will be necessary to relieve the water pressure by other and increased outlets; for if, as it is shown, the genius of all alluvion streams produces an overflow of their banks, it follows that all the natural outlets of the rivers, and even more, must be opened.

If such a plan were adopted, then comes the important query, where shall these outlets to relieve the superabundant water of the rivers be made? This required careful consideration and examination of the country before any settled conclusion should be arrived at. Without dilating too much at present on this branch of the subject, although its importance demands a carefully digested and elaborate essay, I would advise that on the San Joaquin river, the heads of the sloughs be dammed up and slight levees be constructed on the main channels.

The San Joaquin has a number of large channels which are able to carry off the overflow if the slough heads are stopped and the back waters conducted immediately into the Bay. In the Sacramento valley, the Feathers, Yubas and Upper Sacramento bring the great body of water from the upper country, which being concentrated at the mouth of the Feather and there finding the channel from the Sycamore Slough down the edge of the overflowed land to the Bay, running, as the line of such a canal would, along a natural channel for a stream at the edge of the upland. This would relieve the pressure of the water on the main channel of the river and draw off the standing water of the tules and the outflow of the Cache and Puta creeks.

A system of reclamation similar to the one proposed, or in fact any other, should not be left to individuals or counties, but be general for the whole State where required and under the care of a State officer.

Now is the proper time for a determination of the State policy in regard to this matter, and when a proper system is once adopted, all direct legislation thereupon should be in accordance with it.

If further information is required by your Excellency or the Legislature as to the ways and means of accomplishing such a measure, I will prepare a paper at length on the subject.

VIII. GEOLOGY OF THE STATE.

1. The attention of the Legislature having been directed to the propriety of obtaining a correct knowledge of the geology of the State, with such information as would tend to the development of her vast sources of wealth in minerals, the law authorizing the surveys of Dr. Trask was passed, and his valuable reports thereon submitted to the Legislature.

The daily recurring discoveries of new fields of labor in the mining region, the necessity of obtaining permanent supplies of water, and the modifications in the manner of working the mines required by new developments in the geological character of the country, all to my mind, call for a continuance of the work of the geological survey. The labors of the geologist have, heretofore, been necessarily confined to the examination in general of the structure of the different districts, whether mining or agricultural; little opportunity in time or means being afforded for detailed observation. Besides, the work

of a mining engineer, so inseparably connected with a complete geological survey, in its suggestions for the economy on labor, the saving of valuable material now wasting for want of correct information as to its use, the devising of correct plans for carrying on mining operations in certain localities, the digging of wells for the supply of water, and the character of soils adapted to particular uses, requires the continuance to completion of so important an undertaking. In no State of the Union is this action so imperatively demanded as in California. Had she the mining journals, the mining stock associations, the geological correspondence and explorations of other lands, the importance of her mineral resources, and the inducements they offer to the investment of capital and performance of population, would be increased a thousand fold, and her influence be felt where now it is but barely acknowledged. The taking of additional steps in this matter, I most earnestly recommend. The office of the State Geologist should have connection with that of the Surveyor-General, and the reports, specimens of metals, minerals and plants, diagrams, observations, etc., of the geological surveys should be on file in this office.

2. The specimens for a State Cabinet, collected by Dr. Trask, were in part received by Dr. Bates out of the cellars of the Capitol from the Secretary of State, and placed in a cabinet. During the past year I obtained this cabinet and the specimens from Dr. Bates, for arrangement, and they are now in the possession of this office.

While upon several tours taken during the last summer into the mining and agriculture regions, and across the Sierra Nevada, I made examinations of the geology of the country, and obtained a number of specimens for the State Cabinet, which I have added to those obtained from Dr. Trask, and reported by him; a list of which is hereto appended.

1. Gold in quartz, Nevada.
2. Gold in arsenical pyrites, Nevada.
3. Carbonate of Copper, Oregon Creek, Sierra county.
4. Lignite, " " "
5. Silicified Wood, " " "
6. Porphyritic Conglomerate, North Yuba, "
7. Greenstone, " " "
8. Granite, " " "
9. Basaltic Conglomerate, Truckee River.
10. Porphyritic " " "
11. Semi Opal, and (12) Agate, " "
13. Hematitic Iron Ore, " "
14. Specular Iron Ore, " "
15. Basaltic and (16) Feldspathic Lava, Pyramid Lake.
17. Volcanic Tufa, and (18) Scoriae, "
19. Breccia, "
20. Dolomite, "
21. Fluorspar, 22, Feldspar, and (23) Tabularspar, Pyramid Lake.
24. Infusorial Clay, Mud Lakes.
25. Talcose Slate, North Fork, Mokelumne River.

- 26. Auriferous Quartz, West Point, Calaveras county.
- 27. Cellular “ “ “
- 28. Quartz Talc and Gold, “ “
- 29. Talcose Slate and Gold, “ “
- 30. Auriferous Pyrites, “ “
- 31. Graphic Slate, Calaveras River, “
- 32. Arsenical Pyrites, “ “
- 33. Granite, and (34) Green Stone, Stanislaus River, Calaveras county.
- 35. Sienite, Stanislaus River, Calaveras county.
- 36. Agate, “ “
- 37. Chlorite, “ “
- 38. Vitreous Copper Ore, Hope Valley.
- 39. Carbonate, and (40) Sulphuret of Copper, Hope Valley.
- 41. Copper crystallizations, “
- 42. Fossil Wood, and (43) Fern Impressions, Cave city, Calaveras county.
- 44. Stalactites, and (45) Stalagmites, “ “
- 46. Calcareous tufa, “ “
- 47. Compact Limestone, “ “
- 48. Crystallized Calcareous Spar, “ “
- 49. Greenstone, and (50) Granite, Beard’s Mills, El Dorado county.
- 51. Auriferous Quartz, “ “
- 52. Crystallized Quartz, “ “
- 53. Quartz Talc and Gold, Folsom, Sacramento county.
- 54. Native Sulphur, Geysers, Sonoma county.
- 55. Ammoniacal deposit on leaves, Geysers, Sonoma county.
- 56. Magnesia, “ “
- 57. Peroxide, and (58) Protoxide of Iron, Sonoma, Sonoma county.
- 59. Infusorial Clay, Vallejo, Sonoma county.

IX. STATISTICS.

1. As required by the Act “concerning the office of Surveyor General,” I issued a circular to the County Surveyors, and one to the County Assessors, calling upon them to report to this office upon the various points of information required by the law, and also issued a circular to the Boards of Supervisors of each county, enclosing copies of the other circulars, directing their attention to the requisitions therein contained and calling for their co-operation. These will be found in the Appendix. There have been received at this office, for the year 1856, reports from:

J. W. Scott,	County Surveyor of	Butte.
C. D. Semple,	“	Colusi.
Daniel Small,	“	Contra Costa.
W. W. Bourland,	“	Frezno.
Joseph Seely,	“	Humboldt.
Henry Hancock,	“	Los Angeles.
Alfred D. Eastkoot,	“	Marin.

Erastus Kelsey,	“	Merced.
Thomas W. Long,	“	Mariposa.
John Day,	“	Nevada.
Nathaniel L. Squibb,	“	Napa.
Thomas A. Young,	“	Placer.
James H. Whitlock,	“	Plumas.
Edwin A. Sherman,	“	Sacramento.
Irvine M. Stoddard,	“	San Bernardino.
R. W. Groom,	“	San Diego.
J. J. Gardiner,	“	San Francisco.
George E. Drew,	“	San Joaquin.
Wm. Macgee,	“	Shasta.
O. S. Dodson,	“	Sierra.

4. – TABLE OF STATISTICS, Compiled from the Official Reports of the County surveyors and County Assessors, for the Year A. D. 1856, returned to the Surveyor-General.

AGRICULTURAL PRODUCTS

COUNTIES.	Acres of Land Cultivated.	Wheat.		Barley.		Oats.		Rye.		Buckwheat.		Corn.		Onions.	
		Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Alameda.....	56,109	22,054	462,134	20,000	918,000	5,210	260,500	45	2,385	105	7,350	265	10,072	73	-
Amador.....	5,649	800	28,000	1,514	52,990	442	17,680	-	-	-	-	-	-	-	-
Butte.....	12,466	5,466	-	6,445	-	150	-	-	-	-	-	100	-	-	-
Calaveras.....	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-
Colusi.....	10,165 ½	5,320	122,360	4,408	114,602	323	-	-	-	-	-	67	-	-	-
Contra Costa...	12,657	8,611	301,385	2,265	135,900	548	10,960	-	-	-	-	-	-	-	-
El Dorado.....	12,000	960	17,280	1,200	27,600	1,320	26,400	-	-	-	-	-	-	-	-
Fresno.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Humboldt.....	10,000	1,000	35,000	500	15,000	950	40,000	-	-	-	-	15	-	-	-
Klamath.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles.....	-	442	-	3,532	-	59	-	-	-	-	-	4,024	-	-	-
Marin.....	2,995	648	21,384	1,091	43,459	684	29,412	18	625	27	980	19	440	13	9,100 lbs.
Mariposa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Merced.....	10,900	3,100	-	6,500	-	300	-	-	-	-	-	200	-	-	-
Monterey.....	5,450	1,200	-	2,200	-	250	-	-	-	-	-	80	-	-	-
Napa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nevada.....	10,000	1,500	-	2,000	-	500	-	-	-	-	-	-	-	-	-
Placer.....	5,844	-	69,770	-	56,760	-	4,180	-	-	-	-	50	-	-	-
Plumas.....	2,500	1,850	24,500	-	-	*409	*10,500	-	-	-	-	-	-	-	-
Sacramento.....	17,772	6,991	132,420	7,947	210,360	724	23,040	35	450	-	-	160	9,900	-	2,756

* Oats and barley

San Bernardino	-	-	30,000	-	15,000	-	-	-	-	-	-	-	20,000	-	-
San Diego.....	-	-	5,000	-	8,000	-	-	-	-	-	-	-	2,000	-	-
San Francisco..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin....	38,426	12,356	247,120	21,760	435,200	2,938	58,760	52	1,456	37	925	235	6,750	41	16,400
San Luis															
Obispo.....	-	-	10,800	-	8,000	-	-	-	-	-	-	-	500	-	-
San Mateo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara.....	20,000	15,000	180,000	2,400	48,000	1,000	30,000	50	1,000	12	240	100	1,200	60	7,800
Santa Cruz.....	18,229	4,125	-	4,383	-	1,161	-	-	-	400	-	408	-	18	-
Shasta.....	7,748	2,429	63,618	2,752	70,779	884	17,985	-	-	-	-	211	7,004	-	4,443
Sierra.....	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou.....	13,204	7,495	149,900	1,309	39,270	2,648	92,680	20	600	50	1,000	175	-	125	6,250
Solano.....	-	-	182,333	-	127,067	-	16,667	-	-	-	-	-	15,000	-	-
Sonoma.....	25,000	6,420	192,600	2,188	65,640	4,657	162,995	46	-	444	6,660	2,126	85,040	-	-
Stanislaus.....	-	1,696	16,960	2,790	33,480	1,355	-	-	-	-	-	54	-	-	-
Sutter.....	8,679	2,851	48,452	4,860	94,818	293	2,744	-	-	-	96	287	2,547	66	3,382
Tehama.....	14,175	8,500	212,500	5,000	150,000	-	-	-	-	-	-	300	-	-	-
Trinity.....	3,474	947 ½	18,950	1,190	3,880	320 ½	14,422	-	-	-	-	131 1/8	-	43 ½	6,525
Tulare.....	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tuolumne.....	9,800	-	48,190	-	81,362	-	16,201	-	-	-	-	-	4,133	-	5,671
Yolo.....	28,135	13,300	226,000	14,200	350,000	100	2,200	-	-	-	-	60	-	-	-
Yuba.....	19,000	3,019	60,380	5,570	111,400	462	9,240	-	-	-	-	80	480	-	-

AGRICULTURAL PRODUCTS (cont.)

COUNTIES.	Potatoes.		Beans.		Peas.		Sweet Potatoes.		Tobacco.		Tons of Hay.	Pounds Butter.	Pounds Cheese.	Pounds Wool.	No. acres Broom Corn
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Pounds.					
Alameda.....	3,108	217,506	3,657	-	175	-	-	-	-	-	-	120,235	163,013	27,984	39
Amador.....	-	-	-	-	-	-	-	-	-	-	2,600	-	-	-	-
Butte.....	200	-	-	-	-	-	-	-	-	-	-	-	-	-	45
Calaveras.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colusi.....	9	-	-	-	-	-	-	-	-	-	1,175	-	-	-	-
Contra Costa..	241	-	482	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado.....	12	3,600	-	-	-	-	-	-	-	-	1,629	-	-	-	-
Fresno.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Humboldt.....	500	20,000	50	-	275	8,250	-	-	-	-	5,000	80,000	2,000	-	-
Klamath.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles...	-	-	70	-	-	-	-	-	-	-	-	-	-	-	45
Marin.....	353	23,578	118	2,622	24	440	-	-	-	-	-	63,000	13,500	-	-
Mariposa.....	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-
Merced.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey.....	850	-	650	-	-	-	-	-	-	-	-	-	-	-	-
Napa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nevada.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placer.....	-	-	-	-	-	-	-	-	-	-	1,310	-	-	-	-
Plumas.....	200	20,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Sacramento....	115	10,650	-	-	-	-	-	1,181	-	-	9,669	68,450	29,815	21,000	-
San Bernardino....	-	-	-	-	-	-	-	-	-	-	-	18,000	3,000	-	-
San Diego.....	-	1,000	-	200	-	200	-	1,000	-	1,000	500	-	-	-	-
San Francisco..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin...	489	96,450	64	2,876	156	3,120	57	17,100	-	-	11,047	27,847	11,875	22,470	-
San Luis Obispo.....	-	500	-	3,000	-	-	-	-	-	-	100	-	-	5,000	-
San Mateo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara....	200	10,000	200	-	-	-	-	-	-	-	-	-	-	-	-

Santa Cruz.....	2,018	-	3,070	-	50	-	-	-	2	-	-	6,350	2,000	-	15
Shasta.....	324	29,900	-	1,200	-	1,002	-	-	-	-	2,705	-	-	-	-
Sierra.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou.....	487	48,700	40	-	25	-	-	-	-	-	4,500	-	-	-	-
Solano.....	-	-	-	-	-	-	-	-	-	-	13,800	-	-	100,000	-
Sonoma.....	1,800	72,000	540	6,480	572	11,440	-	-	-	-	-	-	-	15,000	-
Stanislaus.....	-	-	-	-	-	-	-	-	-	-	1,000	-	-	-	-
Sutter.....	198	8,403	21	262	18	199	4	1,000	1	-	4,094	68,291	20,910	12,028	33
Tehama.....	-	-	-	-	-	-	-	-	-	-	3,400	-	-	-	75
Trinity.....	530 ½	159,150	20 ½	512 ½	14 ½	362 ½	-	-	-	-	1,227 ½	-	-	-	-
Tulare.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tuolumne.....	-	32,800	-	920	-	1,140	-	-	-	-	3,116	-	-	-	-
Yolo.....	200	10,666	-	-	-	-	100	13,333	-	-	-	-	-	45,500	-
Yuba.....	-	-	-	-	-	-	-	-	-	-	2,575	-	-	-	-

LIVE STOCK.

COUNTIES.	Horses.	Mules.	Asses.	Stock Cattle.	Cows.	Calves.	Neat Cattle.	Oxen.	Sheep.	Goats.	Hogs.	Chickens.	Turkies.	Ducks.	Geese.
Alameda.....	4,734	1,067	63	13,325	4,223	3,638		753	9,328	410	2,013	18,250	728	313	110
Amador.....	735	200	55		1,083		400	380	3,500	110	3,600				
Butte.....	2,986		115		19,380				†7,095		7,063	30,000			
Calaveras.....															
Colusi.....	1,916	358		11,005	2,996	1,645	3,283	402	4,562		10,575	9,016	123		
Contra Costa..	4,195	173	3	21,771					6,912		4,932				
El Dorado.....	1,305	538	120		1,375	837	2,000	1,624	330		6,000				
Fresno.....	1,400	200	150	14,680	2,470	3,560		500	1,000	50	4,000				
Humboldt.....	500	450		1,500	850	830		424			3,000				
Klamath.....															
Los Angeles...	11,220	301	28	69,438	263			883	20,180	300	1,000				
Marin.....	2,060	74		12,667	2,411	2,032		662	3,925	27	824	3,402			
Mariposa.....															
Merced.....	1,473			18,860			2,525	341	7,467		2,067				
Monterey.....	3,939	93		33,315	2,309			582	25,405	108	2,104				
Napa.....															
Nevada.....															
Placer.....	1,052	468		790	1,554	610	3,899	456	1,388		5,543	3,500	263	82	5
Plumas.....	150	540	75		550		500	250			950				
Sacramento....	5,639	802	4	7,170	9,236	1,157		1,278	9,748		8,852	30,614	1,413		
San Bernardino....	1,558	229	3	13,510	731			230	3,917	165	437				
San Diego.....	4,252	427	300	30,383					3,596		558				
San Francisco.	2,500				3,000										
San Joaquin...	3,437	2,345	73		4,549	3,246	12,607	2,343	11,235	536	6,973				
San Luis Obispo.....	2,100	100		26,000					3,500		700				
San Mateo.....															
Santa Barbara															
Santa Clara....	4,200	530	40	16,425	4,300	8,000		850	14,000	300	5,000				

* Horses and Mules.

† Sheep and Goats.

Santa Cruz.....	1,364	95		6,773					1,632		2,388	4,776	88	40	25
Shasta.....	782	859	11		1,357	1,111	736	930	118		4,172				
Sierra.....	55	397	4	197							151				
Siskiyou.....	3,478	2,320	157	7,434	4,320	3,200		†7,280	1,900	81	2,500	9,500			
Solano.....	3,689	400		7,200	3,900	3,900	3,700		15,113	500	7,000				
Sonoma.....	5,590	294	4	14,892	9,460	5,500		2,652	10,814	73	16,886				
Stanislaus.....	2,320	184		10,882	981	802			3,482	205	976				
Sutter.....	1,723	1,005	56	5,878	5,621	3,630	3,083	771	5,536	107	7,078	10,171	288	22	14
Tehama.....	*1,995			11,128					3,410		5,242				
Trinity.....	239	1,202	51		439	258		458	407	31	1,145	9,576	6	6	
Tulare.....															
Tuolumne.....	1,193	716	31		1,509		908	1,024	209		6,114				
Yolo.....	*3,937			19,000					13,760		13,630				
Yuba.....	1,089	961		6,818					5,877		3,400				

† Oxen and Beef Cattle.

* Horses and Mules.

IMPROVEMENTS.

COUNTIES.	Flour Mills.				Saw Mills.			Quartz Mills.	Mining Ditches.			Bridges.	Ferries.
	Steam Power.	Water Power.	Total.	Run of Stone.	Steam Power.	Water Power.	Total.		Number.	Length in miles.	Value in Dollars.		
Alameda.....	2	2	4	16	1		1					1	
Amador.....	1	2	3	6	9	7	16	16	31	460	600,000		2
Butte.....			2		6	10	16			130			
Calaveras.....													
Colusi.....													7
Contra Costa.....	1		1		3		3					17	1
El Dorado.....			1	3	19	14	33	14		1020	532,000	28	
Frezno.....					1								3
Humboldt.....	2	2	4		9								
Klamath.....													
Los Angeles.....													
Marin.....					3		3						
Mariposa.....													
Merced.....													
Monterey.....													
Napa.....													
Nevada.....			2			5	48	5			650,040	11	
Placer.....					15	7	22	4	24	400	399,100		
Plumas.....			2	4			21	4		21			4
Sacramento.....	7		7	19	3		3		7	118	330,000	10	11
San Bernardino.....			3		1	6	7						
San Diego.....													
San Francisco.....													
San Joaquin.....			3										
San Luis Obispo.....		3	3			1	1						
San Mateo.....													
Santa Barbara.....													
Santa Clara.....	3	7	10		3	9	12						
Santa Cruz.....	1	4	5				10	1					

Shasta.....	1	2	3	4			15	2	19	102	204,400		
Sierra.....					12	13	25	2	90	116	512,950	3	
Siskiyou.....			4	8	1	12	13	2	5	129	313,000	4	8
Solano.....													
Sonoma.....					5	2	7						
Stanislaus.....			1	1			1						15
Sutter.....												2	10
Tehama.....	1	2	3		1	1	2						3
Trinity.....			2	2			18		120	260		7	16
Tulare.....	1	1	2				1	2				1	2
Tuolumne.....	1	1	2	3			19	3	20	346	1,481,000		
Yolo.....	3		3	5									
Yuba.....	5	1	6	16	7	19	26	3		108	226,000	9	8

4. – TABLE OF STATISTICS, Compiled from the official Reports of County Surveyors and County Assessors, for the Year A. D. 1856, returned to the Surveyor-General.

HORTICULTURAL PRODUCTS. – NO. OF TREES.

COUNTIES.	Apple.	Peach.	Plum.	Cherry.	Pear.	Nectarine.	Quince.	Almond.	Apricot.	Fig.	Aloes.	Citron.	Lemon.	Orange.
Alameda.....	172,154	133,400	800	7,072	6,422	967	1,875	61	1,800	175	-	-	-	-
Amador.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butte.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calaveras.....	-	-	27	-	-	-	-	-	23	69	-	-	-	-
Colusi.....	322	849	-	-	44	-	27	-	-	-	-	-	-	-
Contra Costa..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado.....	8,100	11,079	360	200	406	-	70	-	30	90	-	-	-	-
Fresno.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Humboldt.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Klamath.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles...	2,058	53,036	311	25	1,716	27	214	9	2,620	837	9	12	60	4,351
Marin.....	2,100	-	-	-	300	-	-	-	-	-	-	-	-	-
Mariposa.....	400	400	-	-	-	-	-	-	-	-	-	-	-	-
Merced.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Napa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nevada.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placer.....	1,637	2,607	118	64	360	-	20	2	20	11	-	-	-	-
Plumas.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sacramento....	38,303	86,600	5,842	6,273	12,897	368	-	16	5,941	1,651	-	-	-	-
San Bernardino....	1,400	13,100	-	-	-	-	-	-	-	-	-	-	-	-
San Diego.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin...	1,640	3,954	250	95	347	-	-	-	-	193	-	-	-	-
San Luis Obispo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Mateo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Cruz.....	2,180	1,220	45	70	224	-	55	7	63	10	-	-	-	-

Shasta.....	2,381	3,451	918	167	645	-	1,220	101	327	93	-	-	-	-
Sierra.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou.....	1,000	500	-	-	400	-	-	-	-	-	-	-	-	-
Solano.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sonoma.....	17,225	8,554	-	-	1,021	-	-	-	-	-	-	-	-	-
Stanislaus.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sutter.....	826	4,098	30	111	164	5	48	56	57	234	-	-	-	-
Tehama.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trinity.....	2,143	3,279	50	51	139	-	-	4	-	-	-	-	-	-
Tulare.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tuolumne.....	1,470	4,362	480	210	850	-	749	93	163	618	-	-	-	-
Yolo.....	3,368	16,731	-	75	211	-	-	-	-	-	-	-	-	-
Yuba.....	5,664	229,432	-	-	-	-	-	-	-	-	-	-	-	-

HORTICULTURAL PRODUCTS. – NO. OF TREES (cont'd.)

COUNTIES.	Olive.	Pomegranate.	Walnut.	Prune.	Persimmon.	Pecon.	Filbert.	Currant.	Gooseberry.	Pine Apple.	Raspberry.	Chirimoya.	Strawberry.	Grape Vines.	Fruit trees kinds not specified.
Alameda.....	-	-	-	-	-	-	-	14,980	1,300	-	-	-	-	84,000	-
Amador.....	-	-	-	-	-	-	-	-	-	-	-	-	-	9,800	4,958
Butte.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,600
Calaveras.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colusi.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contra Costa..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado.....	-	-	-	-	-	-	-	-	-	-	-	-	-	6,390	-
Frezno.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Humboldt.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50,000
Klamath.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles...	567	1,354	957	-	-	-	-	1,800	-	87	1,000	-	-	726,400	-
Marin.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Merced.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Napa.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nevada.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placer.....	-	-	-	-	-	-	-	228	36	-	-	-	16,422	2,702	-
Plumas.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sacramento....	-	-	-	-	-	-	-	5,753	-	-	-	-	-	51,200	-
San Bernardino....	-	-	-	-	-	-	-	-	-	-	-	-	-	80,000	-
San Diego.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin...	-	-	-	-	-	-	-	-	-	-	-	-	-	13,467	-
San Luis Obispo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Mateo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara....	-	-	-	-	-	-	-	-	-	-	-	-	-	150,000	100,000
Santa Cruz.....	-	-	-	-	-	-	-	-	-	-	-	-	-	5,000	-
Shasta.....	-	-	-	-	-	-	-	385	750	-	-	-	-	5,348	-
Sierra.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Solano.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sonoma.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61,590	798
Stanislaus.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,426	1,184
Sutter.....	3	-	3	12	6	3	4	149	26	-	90	14	700	45,123	-	
Tehama.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trinity.....	-	-	-	-	-	-	-	225	-	-	-	-	-	-	150	-
Tulare.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tuolumne.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,858	-
Yolo.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26,902	-
Yuba.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28,000	-

Ed. M. Stevens,	County Surveyor of	Siskiyou.
Phil. E. Drescher,	“	Sutter.
A. H. Stout,	“	Tehama.
Wm. Minis,	“	Yolo.

The above, except those from Los Angeles and San Diego, which contain no statistical returns, will be found in the Appendix.

The Reports from the County Surveyors are more in number than ever heretofore has been the case, yet many were not received until a very late date and after several duplicate circulars had been issued. The Surveyors deserve much credit for the value and character of their Reports, inasmuch as they do not receive one dollar for this service, and are the most poorly paid class of public officers in the State. I might particularly commend many of the Reports, but only call attention to the suggestions contained in the Reports from Placer, Sacramento and Sierra, upon County Roads; from Placer, on the Eastern Boundary of the State; from Sacramento, on Swamp Lands; from Placer and Plumas, on the Immigrant Wagon Road; and from Tehama, upon the Improvement of the Sacramento river.

I would recommend that the laws be so amended that offices shall be furnished by the counties to the Surveyors, and the power be given them to administer oaths and take affidavits, when necessary for the performance of their official duties.

I would also ask, in their name, that a more judicious system of fees be adopted, by which their services would meet with a proper compensation. They should have the entire charge of County Roads and Public Improvements, or else be salaried and required to pay the fees charged into the County Treasury. At present, it is difficult for an Engineer of ability to earn a decent livelihood at the miserable pittance which the present fees afford to a County Surveyor for duties deserving a just and liberal recompense.

2. There have been received Reports for the year 1856 from:

C. B. Breyfogle,	County Assessor of	Alameda.
H. A. Eichelberger,	do	Amador.
Lansing Tooker, Deputy,	do	Butte.
N. W. Dunn,	do	Colusi.
Obed F. Alley,	do	Contra Costa.
H. W. Merritt,	do	El Dorado.
D. D. Williams, Deputy,	do	Humboldt.
James H. Coleman, do	do	Los Angeles.
John C. Dodd,	do	Marin.
James W. Robertson,	do	Merced.
John R. Porter,	do	Monterey.
John McCoy,	do	Nevada.
A. S. Smith,	do	Placer.
E. Sterling,	do	Plumas.
J. Foote Turner,	do	Sacramento.
Jas. W. Rollins,	do	San Bernardino.

A. B. Smith,	do	San Diego.
T. S. Stout,	County Assessor of	San Joaquin.
Fredk. Hillard, Deputy,	do	San Luis Obispo.
J. C. Bland,	do	Santa Clara.
Thomas M. Davis,	do	Santa Cruz.
James C. Hayburn,	do	Shasta.
A. J. McKinley,	do	Sierra.
J. W. Thomas,	do	Siskiyou.
J. S. Jameson,	do	Solano.
Wm. G. Lee,	do	Sonoma.
E. B. Beard,	do	Stanislaus.
D. H. Apperson,	do	Sutter.
Charles E. Fisher,	do	Tehama.
D. W. Potter,	do	Trinity.
E. G. Sayle,	do	Tulare.
James P. Clough,	do	Tuolumne.
F. M. Davenport,	do	Yolo.
J. L. Cox,	do	Yuba.

Returns from every county in the State have been received, either from the Surveyor or Assessor, or both, except from Calaveras, Klamath, San Mateo, and Santa Barbara. This is a more perfect return than has even before been furnished, and its valuable information and public utility will be recognized by the slightest examination of the reports themselves in the appendix, or the statistical table and notes accompanying this report, which have been compiled with much care and labor.

3. REPORTS FROM OTHER SOURCES.

I am indebted to Mr. Alex. S. Taylor of Monterey, for the contribution upon the whale fisheries of Monterey.

I had received from Mr. Ernest Seyd, of San Francisco, some notes upon the native California silkworm, the *saturnia ceanothi*, and several specimens of spun silk of superior quality from it. I was also promised a paper upon this interesting subject, but that not having been received, I can only call attention to this newly developed source of industry and wealth in our State, and recommend it to the fostering care of the government whenever a call may be made in its behalf.

Communications containing valuable information concerning the Immigrant Wagon Road and the Mountain Passes have been received from G. H. Goddard, C. E., on the Gibsonville Ridge, Mr. A. P. Chapman, of Downieville, on the Sierra Valley passes, and Mr. David Shepherd, of Murphy's, on the Calaveras route, which last I have incorporated in my own remarks.

A valuable set of tables of meteorological observations made by Dr. Gibbons, of San Francisco, has been received with the Report of J. J. Gardiner, County Surveyor of San Francisco.

All these will be found in the Appendix, and are deserving particular attention.

5. – RECAPITULATION.

Agricultural products, Live Stock, Improvements, etc., etc.	TOTAL.	Number of Counties.
Acres cultivated,	383,501 ½	28
Acres of Wheat,	138,080 ½	26
Bushels “	2,897,036	26
Acres of Barley,	128,004	25
Bushels “	3,216,567	25
Acres of Oats,	27,678 ½	25
Bushels “	846,566	20
Acres of Rye,	266	7
Bushels “	6,516	6
Acres of Buckwheat,	1,083	8
Bushels “	17,251	7
Acres of Corn,	9,147 1/8	22
Bushels “	165,066	14
Acres of Onions,	449 ½	9
Bushels “	54,310	9
Acres of Potatoes,	11,834 ½	19
Bushels “	764,903	17
Acres of Beans,	9,582 ½	13
Bushels “	18,072 ½	9
Acres of Peas,	1,309 ½	9
Bushels “	26,153 ½	9
Acres of Sweet Potatoes,	161	3
Bushels “	33,614	5
Acres of Tobacco,	3	2
Pounds “	1,000	1
Tons of Hay,	69,947 ½	19
Pounds of Butter,	452,173	8
do Cheese,	246,113	8
do Wool,	248,982	8
Acres Broom Corn,	252	6
Number of Horses,	88,805	34
do Mules,	17,328	29
do Asses,	1,343	20
do Stock Cattle,	381,041	25
do Cows,	89,807	25
do Calves,	42,956	17
do Neat Cattle,	33,641	11
do Oxen,	25,073	22
do Sheep,	199,346	30
do Goats,	3,030	16
do Hogs,	146,873	33
do Chickens,	128,805	10

Number of Turkeys,	2,909	7
do Ducks,	463	5
do Geese,	154	4
Number of Apple Trees,	264,371	19
do Peach,	576,652	18
do Plum,	16,431	12
do Cherry,	14,413	12
do Pear,	26,146	16
do Grape Vines,	1,311,356	19
do Pine Apple,	87	1
do Strawberry,	17,122	2
do Currant,	23,520	7
do Gooseberry,	2,112	4
do Raspberry,	1,090	2
do Nectarines,	1,367	4
do Quince Trees,	4,278	9
do Almond,	349	9
do Apricot,	11,044	10
do Fig,	3,981	11
do Aloes,	9	1
do Citron,	12	1
do Lemon,	60	1
do Orange,	4,351	1
do Olive,	570	2
do Pomegranate,	1,354	1
do Walnut,	960	2
do Prune,	12	1
do Persimmon,	6	1
do Chirimoya,	14	1
do Pecan,	3	1
do Filbert,	4	1
do Fruit trees, kind not specified,	160,540	6
do Steam Flour Mills,	28	12
do Water do,	26	10
	Total,	76
Run of Stone	87	12
Steam Saw Mills,	99	17
Water “	101	12
Total “	323	22
Quartz Mills,	58	12
No. of Mining Ditches,	316	8
Length in Miles,	3,210	12
Value of same,	\$5,248,490	10
No. of Bridges,	93	11
No. of Ferries,	90	13

Total Fruit Trees,	1,087,014
Total Grape Vines,	1,311,356
Total Smaller Fruit,	43,844

6. STATISTICAL NOTES.

ALAMEDA COUNTY.

Beets, turnips and other garden vegetables, 568 acres; strawberries, 38 acres; apple orchards, 426 acres; peach orchards, 173 acres; vineyards, 34 acres; 40 miles of telegraph in operation; several Artesian wells, 178 to 600 feet deep.

AMADOR COUNTY.

35,865 acres of land claimed for agricultural purposes, of which amount 5,649 are under *actual* cultivation; 228 acres of vegetables, embracing every variety produced in the State; 1 iron foundry; 2 tanneries; 4 breweries; 3 soda factories; 1 broom factory; valuation of taxable property \$1,828,792; taxes thereon \$24,140 10.

BUTTE COUNTY.

Osage orange, 15,000 acres; cabbage, 50 acres; 260 wagons and carts; 34 carriages and buggies; several quartz mills, assessed property \$2,315,928.

COLUSI COUNTY.

10,165 acres of land under cultivation; average number of bushels of wheat raised per acre, 23; average of barley, 26 bushels per acre; 25 acres of melons, etc.; 4 ½ acres of grape vines; 2 steam grist and saw mills, 2 run of burrs each; cost \$12,000 each; can turn out 100 barrels of flour every 24 hours.

CONTRA COSTA COUNTY.

Area, 175,000 acres; 12,657 acres under cultivation; 200 acres of vegetables; 170 acres of nurseries; 140 acres of vineyards; 17 bridges, at an average cost of \$300 each; 1 ferry company, capital \$50,000; 3 steam saw mills, capital \$10,000; 1 steam flouring mill, capital \$8,000.

EL DORADO COUNTY.

12,000 acres of land inclosed for agricultural purposes; value of animals slaughtered, \$450,000; value of poultry, \$7,000; 19 steam saw mills, cost \$108,800, present value, \$44,550; 14 water saw mills, cost \$41,900, present value \$28,200; lumber sawed per month, 500,000 feet, worth from \$15 to \$28 per M; 8 water and 6 steam power quartz mills, cost \$90,000, present value \$30,300, crushing 98 tons per day, yielding from \$12 to \$80 per ton; expense of working, \$10 to \$15 per ton; 9 lime kilns; 6 breweries; 5 soda factories; between 300 and 400 tons of ice raised this year;

25 miles of turnpike connected with 6 ½ miles not connected with toll bridges; 20 toll bridges, cost \$125,000, present value \$96,500; 8 toll bridges, one-half in Sacramento and Placer Counties. A very rich copper and silver mine discovered this year, in Hope Valley, near the eastern boundary of the county.

FREZNO COUNTY.

2 vineyards; 1 artesian well; animals slaughtered, 1,872; value of poultry per dozen, \$6 eggs, \$7; value of barley wheat and oats, per lb, 6 cents; of Indian corn, 10 cents; of vegetables, 4 to 10 cents; value of hay per ton, \$50.

HUMBOLDT COUNTY.

Area, 300 square miles; 20,000 acres settled by pre-emption and otherwise; 10,000 acres under cultivation, swamp and overflowed lands purchased from the State, about 2,000 acres.

LOS ANGELES COUNTY.

Acres of land assessed, 1,003,930, excluding lands for which the occupants have no government titles as yet; value of same, \$589,801; value of improvements thereon, \$687,870; value of personal property, \$1,213,079; number of persons subject to military duty, 900; 1 artesian well, 800 feet deep, but no water as yet.

MARIN COUNTY.

Area, 700 square miles; 30,000 acres of land under cultivation; very little swamp lands, but several thousand acres of "salt marsh;" Indian corn, nearly all destroyed by blackbirds; 1 paper mill, water power – cost, about \$50,000; 3 roads surveyed.

MERCED COUNTY.

10,900 acres under cultivation; 800 acres of melons and other vegetables; several hundred fruit trees; 3 grist mills; 3 ferries.

MONTEREY COUNTY.

768,991 acres of land assessed; 5,450 acres under cultivation; 250,000 acres susceptible of cultivation; taxable property, \$1,800,182; vehicles, 183, vegetables, 1,070 acres; 2 apple and pear orchards, value \$11,500; tropical fruits in great variety; 1 vineyard, containing 6000 grape vines; granite shipped to San Francisco, value \$125,000; 2,500 cords of pine wood shipped to San Francisco, value \$27,000.

MARIPOSA COUNTY.

800 apple and peach trees; 1,000 grape vines; 250 tons hay; eggs, \$1 per dozen.

NEVADA COUNTY.

35,000 acres of land pre-empted, 6,000 acres under cultivation; gold produced, \$7,000,000; 5 tanneries; 4 steam pumps for draining quartz leads; 48 saw-mills capable of cutting two hundred thousand feet of lumber per month, valued at \$30 per thousand; 2 flouring mills capable of making one hundred barrels of superior flour per day of 12 hours; assessed valuation of property \$2,518,515, to which will be added a supplementary roll of about \$500,000.

PLACER COUNTY.

12,000 acres of land inclosed; 5,844 acres cultivated; assessed value of taxable property, \$2,200,000; 1 lime kiln; 2 quartz mills, 21 saw mills, value \$90,000; saw over 12,000,000 feet of lumber per annum; value, \$2,500,000.

PLUMAS COUNTY.

21,940 acres of land claimed, 2,500 acres under cultivation, 50 acres garden vegetables; 2 grist mills, value \$30,000.

SACRAMENTO COUNTY.

Aggregate value of property, \$10,590,653; land cultivated, 6,991 acres; 5,720 bushels turnips; 1,866 bushels carrots; 152,700 pounds cabbage; 15,735 pounds beets; 23,500 dozen eggs; fruit, melons, etc., valued at \$19,500; 31,360 animals slaughtered, value \$556,320; 7 steam Grist mills, capital invested \$86,000; value of products \$1,111,500; cost of grain, grinding, etc. \$1,035,250, nett income, \$76,250; 2 iron foundries; 7 breweries; 7 soda factories; 79 carriages factories; 1 pick factory, - brick kilns and yards; 3 broom factories; 2 potteries, 2 soap and candle factories; 5 sash and blind factories; 2 stone and marble yards; 1 Gas works; 220 men employed in fishing; 2 telegraph lines, 44 miles in length; 1 railroad, 22 miles in length, cost of construction and running stock, \$1,100,000, average receipts per day \$475, cost of running per day \$200, nett profit per day \$275 or \$100,375 per annum; amount of gold produced \$2,010,000, cost of working, water, etc. \$362,400; nett proceeds for labor \$1,647,600 345,000 days work done per annum, making an average of \$4.77 for each day's work.

SAN BERNARDINO COUNTY.

10 ranchos; 1 distillery, cost \$3000, and can manufacture 100 gallons of whiskey per day; 1 tannery; 1 Artesian well commenced; 14,000 dozen eggs.

SAN DIEGO COUNTY.

Area, 8,500,000 acres; 20,000 pounds grapes; value of poultry \$2000; coal has been discovered and the mine is now being worked, in a stratum 4 ½ feet thick at 86 feet from the surface; the cultivation of cotton and sugar cane has been commenced with every prospect of success.

SAN FRANCISCO COUNTY.

Area, 22,040 acres; 7,000 acres of cultivation for small grains; 1,000 acres suitable for gardens; 10,000 acres of pasture land; 3,000 acres drifting sand; 1,000 acres occupied by the city of San Francisco, and 140 acres of fresh water lakes; 1,500 acres under cultivation.

SAN JOAQUIN COUNTY.

Tule land, 371,200 acres; land, 554,920 acres; grazing land, 314,600; 15 acres beets; 16 acres carrots; 56 acres parsnips and turnips; cabbage, pumpkins and melons, 154 acres; value of poultry, \$6,971; value of eggs, \$8,230; 4 grist mills – cost of two of these, \$81,000.

SAN LUIS OBISPO COUNTY.

About 500,000 acres of grazing and tillable land; coal supposed to exist.

SANTA CLARA COUNTY.

Land enclosed, 60,000 acres; 20,000 acres under cultivation; 249,679 acres of land assessed; value of same, \$1,977,265; value of improvements on same, \$704,380; value of town lots, \$406,369; improvements on same, \$561,975; value of personal property, \$1,794,688; 1,666 persons subject to military duty; 120 artesian wells, varying in depth, from 50 to 450 feet, and in temperature, from 60 to 90 degrees; 2 quicksilver mines; 3 mineral springs; 1 iron foundry.

SANTA CRUZ COUNTY.

Area, 537,000 acres; acres of land cultivated, 18,229; acres of land taxed, 161,228; value of same, \$441,070; value of improvements, \$232,818; value of personal property, \$495,353; 1 shingle mill, cutting 100,000 shingles per week; 1 quartz mill; annual manufacture of lime, 30,000 barrels.

SHASTA COUNTY.

Land claimed, 30,515 acres; inclosed, 18,431; under cultivation, 7,748 acres; 2 grist mills, cost \$28,000; 15 saw mills, cost \$70,900; 2 quartz mills, cost \$40,000.

SIERRA COUNTY.

500 acres cultivated, chiefly growing potatoes; yield of mines, \$6,000,000; cost of goods consumed, \$3,000,000.

SOLANO COUNTY.

2,500 barrels lime shipped; 75 tons marble; there will be manufactured, this year, 20,000 barrels of flour.

SISKIYOU COUNTY.

Agricultural land, 75,000 acres; land under fence, 9,096 acres; under cultivation, 13,204 acres; swamp and overflowed lands, 25,000 acres; assessed value of real property, \$1,895,805; of personal property, \$842,140; 5 main water ditches; length, 129 miles; value, \$313,000; also several smaller ditches; aggregate value, about \$25,000; 13 saw mills, cost \$68,000; 4 grist mills, cost \$90,000; 1 quartz mill cost \$30,000; assorted vegetables, about 830 acres; animals slaughtered, 9,850.

SONOMA AND MENDOCINO COUNTIES.

Land inclosed, 40,000 acres; under cultivation, 25,000 acres; 46 acres rye, for experiment; grows fine and yields well; 5 steam and 2 water power saw-mills; can saw 100,000 feet per day; 5 water-power flouring mills.

SUTTER COUNTY.

Area, 400,000 acres; 150,000 acres adapted to tillage; 82,000 acres subject to overflow and used for grazing; 50,000 acres, hilly grazing; in cultivation, 9,000 acres; swamp and overflowed lands, 90,000 acres; vegetables, 237 acres; blackberry vines, 40; grapes, 12,000 pounds; value of poultry, \$11,000; of eggs, (38,142 dozen) \$22,885.20; value of animals slaughtered, \$35,400; 15 miles telegraph; 1 artesian well, 250 feet deep.

TEHAMA COUNTY.

Amount of property in the county, \$1,366,575; 380 tax payers; 30,000 bushels of wheat raised this year on the Indian Reservation; 300 acres of vegetables; one distillery, cost over \$12,000, can manufacture 500 gallons of whiskey daily.

TRINITY COUNTY.

26,921 acres of land pre-empted, 8,213 acres adapted to tillage, 40,617 acres adapted to grazing, 935 acres swamp and overflowed, 176 1/8 acres assorted vegetables, 11 acres millet, 88 3/4 acres clover and timothy; 4,708 animals slaughtered; value of eggs, \$30,245; 5 expressess, 72,844 ounces gold dust bought yearly; 2 weekly newspapers, 3 schools, 3 churches, 2 theaters, 1 tannery, 4 brick kilns, 18 varieties of timber; bituminous coal is found; also rhodium, platina, and silver in small quantities.

TULARE COUNTY.

Productions of this county are barley, wheat and potatoes; live stock, 25,000 head, consisting of horses, mules, cattle and hogs.

TUOLUMNE COUNTY.

Acres of land claimed, 36,289; inclosed, 20,100 acres; under cultivation, 9,800 acres; assessed value of real estate, \$324,100; improvements, \$1,012,448; personal property, \$1,259,610; value of animals slaughtered, \$248,319; value of melons, \$51,000, value of cabbage, \$48,172; value of poultry, \$6,000; value of eggs, \$2,000; 3 quartz mills, cost \$40,002; 10 mule arastras, cost \$12,000.

YOLO COUNTY.

150,000 acres of land susceptible of cultivation, about 30,000 acres under cultivation; swamp and overflowed lands 175,000 acres, more or less, part being *at times* valuable for grazing purposes; 100 acres of cabbage; 75 acres of broom corn; value of animals slaughtered \$202,210; 3 steam Grist mills; 5 run of stone.

YUBA COUNTY.

19,000 acres of land under cultivation; assessed value of taxable property \$5,647,672; 7 steam power and 19 water power saw mills, manufacturing 9,160,000 feet of lumber, worth \$164,880; 3 Quartz mills, assessed value \$226,000; 1 water power and 5 steam power Flouring mills, 16 run of stone, cost \$68,000 and made 52,900 barrels of flour this year; 108 miles of ditches, assessed value \$226,000; 9 toll bridges, value \$58,750; 8 ferries, value \$10,700; 2 incorporated turnpike companies, 71 miles of road, cost of construction \$35,000; 2 assay offices, assayed \$1,610,000 in six months; amount of gold received at banking houses this year \$8,548,000.

X. CLAIMS.

In appendix will be found the account of Mr. Mock, County Surveyor of Sonoma County, for the survey of the boundary line between Sonoma and Marin Counties, made under my instructions, in accordance with the Act of the Legislature, passed Feb. 23rd, 1856, defining said line. The amount is \$754 92; which I recommend to be paid; the requisitions of the Act and instructions having been compiled with.

Also, the accounts of Mr. Geo. H. Goddard, Civil Engineer, for services performed under my predecessor, which have not yet been paid. They are certified to be correct by my predecessor. I have been asked to thus present them for payment; and can merely say that in my opinion they are a just claim against the State.

The accounts proper of this office are transmitted to the Controller.

Other survey claims are due, but the accounts have not been received. On their arrival I will transmit them at once to the Legislature.

XI. THE SURVEYOR GENERAL'S OFFICE.

It is required of the Surveyor General, by law, to perform a greater number of multifarious duties than any other officer in the State, and those duties, too, of a character requiring the services of an able and educated engineer. Yet he has been for three years past compelled to attempt the performance of these duties, without

adequate means to insure their fulfillment, either by himself in person or through any experienced assistant. His salary of \$2,000 in State scrip, equivalent to \$1,200 in cash, "less than the pay of a page or a reporter in the Legislature," and much below what a suitable officer should command for one-fourth the labor, prevents that prompt and efficient performance of duty which every engineer who values his reputation desires to accomplish.

During the past year the contingent fund of this office has been necessarily diverted in part from its true direction, for the payment of rent of office and part of clerk hire. It is necessary to have at least one competent clerk constantly in the office, and I recommend and ask that appropriation be made therefore as for the other offices of the State and for the payment of office rent. If it is expected of the Surveyor General to perform his strict duty in fulfilling the requirements of the various laws affecting his office, a salary and appropriations should be given in a spirit of justice and liberality, sufficient to enable him to do so, else it would be far better for the State and the entire profession of Engineering that the office be at once abolished. I would also recommend that the power of administering oaths and taking affidavits in the course of his official duties be conferred on the Surveyor General and his deputies.

All of which is respectfully submitted.

JOHN A. BREWSTER,
Surveyor General.