Inspector on Stand:

Matilija Trial Resumes

2-7-49

AFTER a week's recess, the Ventura county flood control district action against the Donald R. Warren company over building of Matilija dam resumed today in superior court, with John Spielman being called to the witness stand.

Spielman, inspector for the state division of dams and called as a district witness, told of foundation materials encountered during March 1947 at "O", "N" and "M" blocks. He also outlined conversations held at the damsite with Warren or his representatives.

ASKED QUESTIONS

On March 18, Spielman declared, Warren was told that a clay pocket at "N" block had to be excavated. Warren objected to any more excavation, Spielman said.

Spielman declared that on his next inspection visit to the dam—on March 28—he found that concrete already had been poured on "N" block. He questioned whether approval for pouring had been given, he testified.

According to Spielman, the inspector was told by Howard Taylor, Warren's resident engineer, that Taylor thought approval had been received and Taylor had gone ahead with the pouring. Spielman declared that he told Taylor at that time that Warren was supposed to have notified the state when the clay pocket was removed. "I had expected to be called for another inspection," Spielman declared.

On the March 28 visit, Spielman was accompanied to the damsite by William Holmes, also of the state dam department. Holmes told Taylor at that time that a pocket of clay at "M" block would have to be removed, Spielman said. He also reported that Holmes pointed out that the pocket probably extended under "N" block as well.

TALKED TO TAYLOR

Spielman said Holmes questioned Taylor about the fact the clay pocket had not been removed. Taylor answered, Spielman declared, that he believed the material should be removed but that he was working under Warren's instructions.

Spielman said he went to the dam again on March 31 after Holmes had had a telephone conversation with Warren. He said he again had a conversation with Taylor about inspections and Taylor's responsibilities. According to Spielman, Taylor told him he didn't think the material that had been poured on was "any worse" than some other material that had been approved or had been poured on previously. It had only been softened by the rain, Spielman quoted Taylor as saying.

2-7-49

2-8-49

Working Model Of Matilija Digging Shown

Tues. 2/8/49

Participants and spectators at the superior court hearing of the Ventura county flood control district-Donald R. Warren company action clustered this morning around a model of earth formations at Matilija dam.

They watched while John Kier, superintendent for Contractors Atkinson Kier Bressi and Bevanda on the Matilija dam job, explained by way of the plastic model what steps the contractors were required to follow in excavating below elevation 1,000 at the damsite.

TAKES IT APART

Kier piece by piece took from the model plastic sections as he showed how the contractors finally excavated to the lowest elevation of 935 in the vicinity of the right abutment and 948 or 950 at the left abutment.

As he went along, Kier explained that the original plans of the Warren company called for excavation to assumed bedrock of 960 elevation but that further excavation had to be done. He presented the model in court, which formerly was exhibited before the flood control district supervisors, to explain in part, why the contractors asked for extra claims for work on Matilija dam.

Kier said that the original plans had called for excavation below elevation 1,000 of between 18,000 and 21,000 yards and that excavation actually amounted to approximately 58,000 yards.

SAYS PLAN CHANGED

Kier also contended that the contractors in September, 1946 were ordered by the Warren company to stop excavation on the apron at approximately elevation 975. This, too, was a change from original plans, he said.

Stopping of excavation on the apron forced the contractors to change method of work on the excavation of the dam's keyway, the portion on which the dam proper was poured. Contractors were restricted to an operating area of about 40 to 50 feet, Kier said.

Kier came on the stand after John Spielman, state division of dams inspector who was the sole witness yesterday.

Spielman, both on direct and cross examination, was questioned

(See SPIELMAN, Page 2)

SPIELMAN QUESTIONED ON CONCRETE POURING

(Continued from Page 1)

about foundation conditions at "N," "M" and "O" blocks and about concrete pours. Throughout, he maintained he knew of no approval being given for concrete pouring beyond elevation 1020 up to March 18, 1947. That date, Spielman contended, was the date on which Warren was told a clay pocket at "N" block would have to be excavated.

Spielman placed elevation of the clay pocket at 1040; he could not remember by what means he had designated the elevation. He said the excavation orders came March 18 from Wayne Perkins of the state division of dams.

CONCRETE POURED

When Spielman returned to the damsite March 28, he found concrete had been poured on "N" block and that "M" block had been poured to about elevation 1035. Spielman told Charles Loring, one of Warren's attorneys, he had checked the diary of Warren's resident engineer, Howard Taylor, to learn whether he could find anything about approval for "N" block pours. There was no such entry, he said. He checked no other Warren company record, he reported.

The witness contended Warren had been called about "N" block after Spielman's March 28 visit. He said William Holmes of the state division of dams called Warren. Spielman said he "could not be sure about it" but he thought Holmes had told Warren "N" block had been poured without approval. He also told of inspecting the memos of Wayne Perkins of the state division of dams, senior inspector for Matilija dam. Perkins memos showed no approval for "N" block pours, Spielman contended. He also reported that Perkins had notified him on March 19 that Warren was going to have the clay pocket removed.

Spielman also told S. V. O. Prichard, the district's attorney, of twice calling the Warren office between March 18 and 28 to check on the Matilija job because he "expected to get a call to make an inspection." During neither of the calls was he informed that "N" block had been poured, Spielman testified. He also said he never received a call to make an inspection.

POURING FORM UP

Spielman admitted to Loring that "N" block pouring forms were up when he visited the damsite on March 18. Loring also questioned him about pours on "M" block, which is adjacent to "N." Spielman told Loring he had not checked Taylor's diary on March 28 to find out wheather approval for "M" block pours had been given. He did not check any other records nor write a memo about pours on that block, Spielman testified.

Loring queried Spielman as to whether he or Holmes had asked for the removal of any concrete or stoppage of concrete pouring prior to April 17. "I don't believe so," Spielman answered. Later, he told Prichard that Perkins had suggested to John Hallock, Warren's project manager, that concrete pouring be stopped as the radii of the dam might have to be lengthened.

Both sides questioned Spielman about "O" block, and Spielman told of two conferences. On April 17, he said the merits of drilling core holes at block "O" were discussed. Warren's men thought the rock was good enough and did not need to be drilled, Spielman said.

The matter was discussed again May 24. Spielman reported Consultants Chester Marliave and Fred Hermann thought holes were unnecessary and that Holmes and Dr. Charles P. Berkey, the district's consultant, favored the exploratory holes. He said that State Engineer Edward Hyatt, also at the conference, then directed that holes be drilled. According to Spielman, presence of soft material was disclosed when the holes were drilled.

2-9-49

John Kier On Stand Again

Wednesday, Feb. 9, 1949

2/9/49

JOHN Kier, who served as superintendent for the contractors on Matilija dam, was under cross-examination during this morning's superior court session of the county flood control district's action against the Donald R. Warren company.

Kier, who was on the stand all day yesterday, was being queried today about progress of excavation on the damsite during early stages of the project, delays suffered and about material used on the job.

Under questioning by Stanley Burrill, one of Warren's attorneys, Kier said the contractors were held up for about 15 days in starting the job by the district's failure to sign the contract (let May 28, 1946) until June 18. He also said the contractors received a 15-day extension because the county did not close off the road that ran along the left abutment of the dam. The job was not delayed but excavation was delayed by the road's being left open, he said.

Kier reported that he knew quantities set forth in Warren's specifications were estimates only and he said he "probably did" advise supervisors prior to signing of the contract that quantities might be more than set forth in the estimates.

According to Kier, the contractors first moved on to the job on June 20. They worked with one shift until after a conference with the Warren company at which Warren complained about the slowness of the work, Kier declared. After Aug. 19, the contractors had two shifts on the job, Kier reported.

He said the contractors had moved about 21,000 yards by Aug. 19 and they were working in the lower portion of the left abutment at that time. Under Burrill's questioning, Kier admitted that no material was moved by truck between Aug. 1 and 7 and Aug. 11-15. Trucks were broken down he said. He contended, however, that a bulldozer during that time was still moving material. Excavation generally was about at elevation 1,000 at that time, he said.

Before cross-examination started late yesterday afternoon, Kier

(See KIER page 9)

DEMONSTRATION IN COURT—John Kier, supeintendent for the construction firm that built Matilija dam, brought a working model of the excavation operation for the dam into superior court yesterday when he appeared as a witness in the county action against Donald R. Warren company, Los Angeles, designers of the Matilija structure.

Kier on Stand Explaining Matilija Dam Earth Formation

(Continued from page 1)

completed direct testimony under the guidance of Attorney Leonard Janofsky, who has been handling questioning of the contractors men for the district.

Kier referred to a model of earth formation below elevation 1,000 and to transparent plastic slides showing a cross-section of the below-surface excavation as he answered questions.

He was questioned about claims the contractors submitted to the flood control district as they sought payment over and beyond the contract bid. The district paid the contractors $86,000 on their claims and now seeks, in turn, to obtain this money from Warren.

Kier outlined the contractors' bases for claims on extra excavation, extra concrete, flood costs, water control and diversion pipe extension. He contended change in orders by the Warren company on apron excavation forced the contractors to work in a restricted area in excavating the keyway and also made apron excavation more expensive because the method of blasting had to be changed. Method of handling drainage also had to be changed, Kier declared.

EXTRA WORK

Pouring concrete at elevations below Warren's assumed rockline of 960 also was expensive, Kier said. He declared the contractors had figured on doing the excavation during dry weather but because of "many circumstances" were caught at the lower depths of excavation when floods came. He said if the work had been done as originally set forth the contractors "would have gotten out of the hole" before the floods and would have had concrete poured.

Water had to be pumped out, the area had to be cleared and work started again after the floods, he said. Kier declared the contractors had relied on Warren's specifications and their own knowledge of weather conditions in this area to be out of the low-level excavation by the rainy season.

There were other costs that arose because of the added excavation, Kier testified. More concrete had to be purchased and, since the market was rising, it cost more, Kier said. The contractors also had to keep equipment on hand at the damsite until the apron excavation was completed.

The job lasted longer than Warren's specifications set out and contractors, as a result, were forced after Aug. 1, 1947 to pay increased labor costs, Kier contended. The length of the job also forced the contractors to carry insurance premiums for a longer period of time than anticipated, he said.

2-10-49
THURSDAY

Witness Flies To Trial

949

2/10/49

THIS morning's superior court session of the Ventura county flood control district-Donald R. Warren company action featured testimony of a witness who flew from New York City especially to appear for the district.

The witness is Randall Cremer of Ojai and New York City, civil engineer who has been serving on the zone one advisory board since May 1947.

DESCRIBES CONDITIONS

After detailing his experience in dam design, construction and inspection work in both the United States and South America, Cremer described the conditions he found at Matilija dam when he came to the county to take up residence in Ojai.

Cremer explained that he first visited the damsite on May 13, 1947 after he learned that work on the dam had been shut down by the state and there was great excitement over the project. He also attended a meeting of the flood control district supervisors on the same day and was appointed to the advisory board at that time.

UNSOUND MATERIAL

On his visit to the dam, Cremer said, he found "N" block had been built on unsound material. Gouge material could be picked off the concrete walls under the block like putty he said. He also reported he observed the "N" block "bear hole", as excavation of the poor foundation material progressed. The band of gouge, ranging in thickness from 18 inches to three feet dipped in the direction of downhill and downstream, he said.

When some excavation work was done under "M" block continuation of the gouge material could be seen, he reported. He said it was his opinion that the gouge seam extended farther downhill than the point that it was excavated to at "M" block.

NIGHT SESSION

Yesterday's court hearing went into a night session to complete cross-examination of John Kier, superintendent for Matilija dam contractors. He will have to return to the witness stand later, however, for re-direct examination.

Kier was minutely questioned about claims for work on the dam by Stanley Burrill, one of Warren's attorneys. The two tangled

(See MATILIJA, Page 2)

Matilija Dam Trial Night Session Held

(Continued from page 1)

verbally after Burrill questioned Kier about differences in equipment rental charges in 1947 and 1946.

Kier said the first claim included standby charges and that contractors were not sure whether they could make such charges. The figures were hastily prepared and the person who prepared them was discharged, he said. After he admitted Warren had said the first account was padded, Burrill asked point-blank whether contractors had padded the account.

Kier took exception. "I wouldn't say we did," he answered. "We told the engineer the claim was for review, if there was anything wrong there was the matter of correcting it . . . padding is far different thing from an interpretation of costs . . . you are making an implication that it was not honest."

The first claim was nullified by presentation of later claims although never officially withdrawn, Kier said.

Progress and method of pouring concrete also were discussed. Did contractors, after official approval was given, delay pouring from Oct. 25 to Nov. 4, 1946? Kier did not feel the contractors had received official approval to pour on the earlier date; pouring did not start until the latter date, he said. He also was asked if concrete pouring below elevation 960 would have been less expensive if the contractors' creek pump machine had worked properly.

KIER TELLS JUDGE

During this questioning, Kier turned to the judge with an explanation. He told the judge contractors had bid on the job on the basis of pouring concrete from a trestle system from the apron section. When apron plans were changed in September 1946, contractors had to improvise. They tried the creek pump system and abandoned it in January, 1947. They then used a long boom to pour until another trestle system could be devised, he said.

Pouring operations increased after the creek pump system was abandoned, he said. He also reported contractors used the apron section as long as they could to allow use of a crane system in pouring. Contractors even built up the apron section to get better use of the crane, he said.

Burrill thought contractors once had tried to collect for pushing in extra dirt on the apron section. Kier had no such recollection, He said the contractors eventually excavated the apron after plans were worked out by the Warren company about June 1947; that the work was done at bid price, and that contractors asked for claims only for keeping standby equipment on the job until the apron work was done.

Queried about claims for damages in three floods, Kier said the contractors had collected insurance on two of the floods. He thought contractors had received about $19,000 or $20,000 from insurance and had twice paid out premiums of $6,000 or $7,000. He volunteered to send exact figures to the court so the judge could decide for himself whether there was duplication.

Kier also was asked about a December 1946 letter from the Warren company about slow progress on the dam. He said both contractors and their bonding company had received such a letter. He believed, he added, the contractors' answer also should be filed. Burrill's answer to that was that Kier's counsel would take care of that. The district's attorneys indicated they would.

Conferences on claims settlement also were discussed. Kier was asked whether Attorney S. V. O. Prichard had told him, in a November 1947 conference, that supervisors had given him a free hand and that he, Prichard, was going to sue the Warren company. Kier recalled no such statement; he did not know what Prichard was going to do, he added.

The Warren company was left out of settlement discussions, Kier said. He declared he had told Warren company officials he thought they should have been included in the discussions, but he denied he ever had told them he would "be happy" to get claims of about $35,000.

Again turning to the judge, Kier explained that he had worked closely with John Hallock of the Warren company to try and bring about a settlement. He felt the concerns they represented did not want to get into litigation, he said. He contended, however, he did not name a settlement figure to Hallock. He suggested Burrill ask Hallock about it.

"I'll ask him at the appropriate time," Burrill replied.

2-11-49

Trial Moves To Dam

2/11/49

RANDALL Cremer, New York and Ojai engineer, was on the witness stand in Superior court for the second day today, after Judge L. N. Turrentine had moved the whole Matilija trial proceeding, kit and caboodle, to the scene of the much-argued dam yesterday afternoon.

Cremer was under direct examination this morning, testifying about earth formations around the site in Matilija canyon and about keying of dam abutments into canyon hillsides, as the action of the county against Donald R. Warren company, dam designers, continued.

The trip to Matilija dam came after Cremer had testified about a meeting at which Dr. Charles P. Berkey, the district's consultant, state representatives and Warren had been present. Dr. Berkey contended that the poor material found under "N" and "M" blocks probably dipped down the hill and should be excavated until it was ascertained where the crush zone went, Cremer said. He reported that Dr. Berkey said this was needed so there would be assurance that the dam was founded on sound sandstone of sufficient thickness for supporting the dam.

Cremer declared Dr. John Buwalda, Warren's geologist, concurred with Dr. Berkey. Cremer said it was his own opinion, too, that the excavation should have been carried to a point further downhill than "M" block.

At the damsite, Cremer said he had seen the apron section of the dam as it was uncovered for pouring and also the downstream edge to the dam proper, which could be viewed to a depth of about four feet.

Chipping off a piece of earth from a bank at the outer edge of the apron, Cremer said the sample he obtained was similar in character to the material on which the apron had been poured. Yesterday's samples showed fine grain sandstone that had been crushed and held together by clay, Cremer declared. It breaks down easily, he said, breaking off a chunk and handing it to the judge. The same was true of samples he took from the apron section, Cremer declared.

More samples were chipped by crowbar from a watery pit by County Employe Walter Loban and Cremer. Cremer identified one of the samples as similar to "the best and hardest" of the material that could be found at the apron section. Any of it will break down into mud and about the longest time it will take is 24 hours, he declared.

Warren's attorneys asked Cre-

COUNT Page 2)

Court Trial Moves To Matilija Damsite

(Continued from page 1)

mer to dig farther into the pit to get a sample that had not been wet. This, too, was handed to the judge. When attorneys asked Cremer to identify the material he said he wouldn't undertake to describe altered sandstone on the basis of such small samples except to say that the samples showed crushed sandstone. He said he had not ascertained strength of material at the dam nor dug a test pit. His observation of the downstream edge of the dam at the time the apron was sunk led him to the conclusion that the dam had not been sunk into rock, he said.

Dr. John Buwalda, Warren's geologist, also present on the trip to the dam, examined the samples before the party returned to the courthouse, where regular session was resumed.

SAW CORE BORINGS

Cremer reported he had seen the core borings taken in 1948 at "K" and "L" blocks of the dam. He said from these cores it appeared to him that the "M" and "N" soft zone extended under the "K" and "L" blocks. He said he felt there should be further investigation and that there probably would be "mining out" operations under the blocks.

Cremer reported it appeared to him that the earth formations should have been investigated before the concrete was poured on these blocks. Cremer also testified that he saw no evidence of the abutments being "keyed" into the hillsides. A longitudinal profile from the Warren company files didn't indicate any stepping had been employed on the right or left abutment to key the abutments into the hillsides, he said.

Matilija Damsite Debated

2/12/49

AS an engineer, Randall Cremer of Ojai and New York City would not have taken the responsibility of building a dam on the site the Donald R. Warren company selected for the concrete arch-type Matilija dam.

So Cremer, on the witness stand for the second day yesterday, testified for the Ventura county flood control district in its superior court action for damages from the Warren company over building of Matilija dam. Court is recessed today, but Cremer is expected to be placed under cross-examination when court reconvenes Monday morning.

POSSIBLE FAULT, HE SAYS

Cremer testified that, from his knowledge of conditions at Matilija dam, he would say the foundation is bad, that there is the possibility of a fault in the area and that he would not take the responsibility for building a dam on the site. He said he did not believe anything should be built on such a foundation as that at Matilija without extensive exploration.

The witness said that if he were going to build a dam on the Matilija site he believed a rockfill type would be most suitable, that the cost would be less and that it would be easier to adapt an earthfill or a rockfill dam to increase its height and thus increase its capacity. He said he thought it would be neither economical nor advisable from an engineering standpoint to increase the height of Matilija dam, as it is constructed.

HYPOTHETICAL QUERY

Cremer was given a hypothetical question to answer which assumed evidence that has been introduced into the court hearings on procedure of mapping plans for the dam.

The question assumed that the damsite had been selected in Feb. 20. 1946, that Warren's geologist, Dr. John Buwalda, thereafter recommended stripping and test pits before final design of the dam was decided upon, that the district at Warren's request took off some of the overburden on the left abutment, the work being in progress from April to May 9, 1946, that Warren's plans and specifications were presented to supervisors April 23, 1946, with drawings submitted with the plans being dated April 23 or earlier.

Cremer was asked about such engineering procedure and

(See ENGINEER, Page 2)

Engineer Calls Matilija Site Bad

(Continued from Page 1)

whether the exploratory work done was sufficient for preparing plans and specifications. He described the procedure outlined as "utterly inadequate, entirely without good engineering practice and out of step with the recommendations of Dr. Buwalda."

Shown a picture which purported to depict the stripping the district did, Cremer described such stripping as a process of simply scraping off the dirt. He pointed out that Dr. Buwalda's report also referred to stripping in the streambed and testpits. He could not see that the stripping bore any relationship to Dr. Buwalda's recommendations, he said. According to Cremer, it would be impossible for any benefit to be derived from such stripping by the time Warren's plans and specifications were completed.

Cremer also was asked whether the design of a project such as Matilija dam should be predicated on the assumption of bedrock being suitable and economical for the site proposed. That situation is fantastic, Cremer declared, adding that he had not been willing to believe such was the case when he first learned such assumptions had been made. He said he could not understand an engineer proceeding along such lines, but he declared, he knew such had been the case. It absolutely is not good engineering practice, he contended.

EXPLORING METHODS

It is the universally accepted practice among engineers for earth formations to be investigated before a damsite finally is chosen, Cremer declared. Such explorations are done by core borings, stripping, test pits and other methods, he contended. Exploratory work is usually done before the dam is designed. Such work is important in a concrete arch type dam to be sure of getting good abutments. Cremer contended. Mere stripping of overburden from the site is not adequate, he said. He said stripping operations with trenches take from three to four months.

One test pit would not be sufficient to get information about under-surface conditions, he said. Cremer reported core drillings give information at a greater depth and are reasonably cheap. Results from core drillings sometimes lead to the abandoning of a damsite because of information revealed, he said.

Core drillings also assist contractors in making their bids and usually result in cheaper bids, Cremer testified. He also reported that on a "properly conducted job" exploratory work continues after work on the dam starts. He felt the faulty material conditions around "N" and "M" blocks could have been discovered after excavation and before pouring of concrete by the core hole drilling method.

Cremer contended that it was not proper, good engineering, nor common sense to ignore deformations of earth formations. There were deformations at the Matilija damsite, he said. It was his opinion that there was no sound ledge rock on the dam's apron.

Cremer said it was important to "seal" the dam concrete to the rock to provide water tightness and to aid the dam in carrying its load. The dam and the abutments should be as one and should be well bonded together, he contended. He said the abutments should be "keyed" to the hillsides.

From his own studies, references to drawings and photographs, and to core borings taken in 1948, Cremer took the stand that there are only rare instances of "sealing" on Matilija dam and little "keying of" the abutments.

2-14-49

Matilija Trial Slowed

Mon 2/14/49

PROCEDURAL matters slowed progress in the Matilija dam suit this morning as superior court reconvened after the week-end recess.

Engineer Randall Cremer of Ojai and New York City continued testifying as the county flood control district's witness against the Donald R. Warren company, dam designers.

TECHNICAL DETAILS

As the morning session drew to a close, Cremer was describing the purpose and importance of cutoff walls in dam construction. He said such walls, placed upstream of the dam, assist in water tightness of a dam and help to avoid possibility of water uplift under the dam. In the case of Matilija dam, a cutoff wall would help drain out sulphur springs, he said, adding that profiles of the dam do not show any cutoff wall.

Cremer also contended that use of a grout curtain helps to take away water percolation from the dam proper, forcing water to go far below surface before coming up again.

Cremer gave a description of the Matilija earth formation, saying that it turns as it crosses the dam. Cremer contended that the Matilija "overturn" is quite famous, that he had heard about it when he was in college and that "all geologists know about it."

The formation extends into upper Ojai and vestiges of it can be seen on top of Topa Topa, Cremer contended. The formation can be seen on Nordhoff mountain and at the north fork of Matilija he said, and it turns and goes across at the dam and then makes another turn. He added that the formation goes off into Santa Ynez mountain. There are numerous breaks in the formation; one can be seen at Ojai's Senor canyon, Cremer declared.

SKETCH INTRODUCED

He said the section that crosses Matilija dam is entirely out of line with the general trend of the formation. It is between two bends; there is great evidence of pressure, according to Cremer. He said he thought pressure had produced buckling of strata and crushed zones at the damsite.

The court allowed introduction of a sketch prepared by Cremer purporting to show the surface foundation of the apron spillway as disclosed by photographs taken by the Warren company. Cremer said he tried to get all the foundation features shown on the picture into the sketch. The court required the Warren company to identify the blocks of the apron of which the photographs had been taken.

The Warren side objected, but the judge said that since the pictures had been taken while Warren was a district employe the district had a right to have the blocks identified.

2-15-49

Cremer on Stand:

Witness Criticizes Warren

2/15/49

THE temperature got uncomfortably warm in superior court today during cross-examination of Engineer Randall Cremer in the Ventura county flood control district action against the Donald R. Warren company.

CREMER SPEAKS OUT

Cremer, a district witness, struck out at Warren while he was being cross examined by Charles Loring, one of Warren's attorneys. Contending he had no prejudice against the Warren company, Cremer said he felt nothing but pity for Warren. It's entirely Warren's "fault" that he's in "this mess," Cremer said.

The witness said Warren would never listen to him although he tried to give his best service to the district on Matilija dam. He said he found himself in a situation where no one would take his advice and where he received slurring and sneering treatment from Warren.

Cremer contended that other members of the Warren company treated him courteously but that they gave him the "runaround" when he asked for information. He said he did not go near the Warren office after May 24, 1947 but he did talk afterwards to some of the other members of the staff and he liked two of Warren's employes, Joe Hyde and Howard Taylor.

Cremer said he complained to the board of supervisors about getting the runaround, that the supervisors indicated they would take action but that they never did. They apparently had confidence in Warren, Cremer declared.

He said he contributed to the suggestion that Warren should not remain on the Matilija dam, that an engineer consultant should be called in on the project. Cremer charged that he was unable to get records on the grouting at the dam from the Warren company and that information was not available to him until after Warren was gone. County Surveyor Robert L. Ryan tried and did get some of the records but they came in too late, Cremer contended.

LOOKED FOR HYDE

Cremer began his "talk" when Loring contended Cremer had purported to represent to the court that he had attended a meeting of state men, district men, Warren men and consultants at Wheeler Hot Springs on May 24, 1947. Loring read back Cremer's direct testimony on the matter.

Cremer contended he had no intention of representing he had attended the meeting but said he had been at the damsite prior to the session and had, as an observer, talked to the various men who later attended the meeting.

Cremer admitted he had looked for Hyde, at the request of his New York office, to discuss employing him because Hyde had written to Cremer's company asking for a job. Cremer said that Hyde had been spirited away when Warren left the job, and that as a result he wrote to Hyde suggesting that he and Taylor write directly to the New York office if they were interested in obtaining jobs.

After Cremer's statement, Loring questioned Cremer about various technical phases in regard to the dam and his "condemnation" of the Matilija damsite.

MINUTELY QUESTIONED

Cross-examination of Cremer began yesterday afternoon and included a minute scrutiny of his work on various dams. He said he had designed a concrete arch type dam while taking a graduate

(See CREMER, Page 2)

course but had never been resident engineer or construction engineer on such a dam.

Cremer said he had, however, inspected a site in Colombia for which a concrete arch type dam was proposed. He said he recommended against such construction even though some work had started. The work was stopped, the damsite later was moved downstream and a rockfill design dam then was chosen, he reported. He said he had not inspected a site where a concrete arch type dam ultimately was developed.

Cremer said his work between 1913 and 1938 primarily was with ports work and bridges and that on his membership application to the American Society of Engineers he had not listed dam jobs but had picked out some of his biggest jobs—"some up to 20 million." He said the corporation in which he is vice president is principally engaged in ports work and bridges.

Cremer said he is licensed engineer in both California and New York and licensed as a professional engineer in New York and a civil engineer in California. He said he never had registered in California as a structural engineer.

During cross-examination, Loring several times indicated Cremer considered himself employed on Matilija dam. Cremer said he did not come to Ojai to accept employment on the dam job, had not been employed by the district and had never told a New York acquaintance, Faison Dixon, he was employed on the dam project.

COURTROOM TENSE

He also was queried about several conversations he purportedly had with John Hallock, Warren's project manager. He stoutly denied he ever had told Hallock, as Loring suggested, that he had had experience on only one dam—a West Virginia dam. Cremer declared he told Hallock he was interested in Matilija because of its similarity to the West Virginia dam.

The courtroom grew tense when Loring asked about a conversation Hallock purportedly had with County Surveyor Robert L. Ryan in regard to Cremer. Loring asked if Hallock had told Ryan that if Cremer did not quit interfering with the consultants and experts he'd be thrown off the job. Nothing like that was said in his presence, Cremer crisply replied.

Cremer was questioned lengthily about "N" and "M" block material removal. He said it was his understanding mining-out operations were not to be limited to one clay-like seam but that the entire crushed zone was to be removed. Twice Cremer was asked to identify earth materials depicted on photographs. Both times he answered but indicated it was hard to say exactly what materials were shown on the pictures.

Cross-examination began after Cremer completed lengthy direct testimony for the district. His concluding testimony indicated he thought a cutoff wall upstream of the dam is necessary for the safety of the dam, that the dam's apron needs to be rectified to protect against cutting and that some kind of low-level outlet is needed to serve as a relief opening.

Still on Stand:

Cremer Queried On Hiring

2/16/49

ENGINEER Randall Cremer's introduction into the Matilija dam picture was delved into today, as cross-examination of the witness continued in superior court in the hearing of the Ventura county flood control district's action against the Donald R. Warren company.

Charles Loring, one of Warren's attorneys, queried Cremer about his appointment to the zone one advisory board in May 1947 on the day after he took up residence in Ventura county.

Cremer said he attended a meeting of supervisors and gave a brief talk, explaining he had looked over the dam and offered his services to the district. At the meeting, he said, there was discussion of appointment of a district consultant board over the "bear trap" situation at the dam.

Cremer said County Surveyor Robert L. Ryan had taken exception to some portions of a letter written by Warren and that Ryan recommended experts be employed. Ryan, Cremer reported, suggested Dr. Charles P. Berkey as a geological consultant.

When supervisors seemed undecided, Cremer said, he arose and reported he personally had the highest regard for Dr. Berkey and his work. Supervisors asked him several question about the dam; there was considerable concern at that time about whether the dam could be completed to original anticipated height, Cremer said. The engineer said he informed supervisors he thought the dam could be completed if precautions were taken.

It was after this that he was named to the advisory board. Cremer admitted he knew no members of the advisory board prior to the meeting, had no relatives in the county and generally was not well acquainted with zone residents.

He told Loring it was the accepted code of ethics for the engineer on the job to be consulted about the hiring of consultants. He was not required to answer any further questions about this matter.

Cremer also was questioned about obtaining a license as an engineer in California and he admitted that his sponsors were Ryan, County Hydraulic Engineer Richard Jamison, R. L. Stump, principal county engineer in the surveyor's office, John Dron, acting engineer of Ojai city, and Rush Sill, consultant in the dam trial for the district.

He was asked if he obtained his license in California to qualify himself to criticize Matilija dam. That was not true, Cremer said.

Yesterday afternoon's session was devoted to detailed questioning of Cremer about his observa-

(See LAUGHTER page 2)

(Continued from page 1)

tion of Matilija dam and his suggestions for improvement.

Laughter poured forth in the courtroom a couple of times when Charles Loring attempted to get conditional approval of the damsite from Cremer. As Cremer kept adding factors that had to be taken into consideration before he considered the damsite sound, Loring told the witness he never expected him under oath to say the Matilija damsite was good.

Loring wanted Cremer to say that if the amount of grout used on Matilija dam was comparable with that used on other United States dams and if, after grouting, substantially all percolation had stopped the conclusion could be drawn that the damsite was good.

Cremer, insisting that he was not being obstinate but was trying to explain his feelings, said the rock on which the dam rests could not be forgotten. He said he would have to add that there must be sufficient base for the dam and that the concrete and dam base have to be sealed together. If these and the other conditions were met, it would sound like fulfillment of all requirements for an adequate damsite, he said.

During one point in cross-examination Loring reminded Cremer he was under oath and asked him if he wanted to reflect on or modify his testimony. This came during questioning about cored material from L, K and J blocks. Cremer said he had seen what appeared to be crushed material and clay-like fragments taken by the coring process.

He said he believed he had seen dry cores taken and that a dry drill was used at times.

LORING CHECKS

Loring said he had checked with Driller Frank L. Howard at the noon recess. He quoted Howard as saying no dry samples were ever present at the damsite. Cremer answered he did not believe hat was a fact. According to his recollection, he had seen dry samples, he said, adding there were several drillers on the job.

He also was questioned about his testimony that he does not believe the material under the dam is adequate for a concrete arch type dam and that he believes there is a fault in the damsite area. Cremer said he did not know how many southern California dams were erected on or near faults nor how the Matilija damsite compares with such dams.

The whole Matilija damsite area is deformed but the dam was placed at the worst place, he said, indicating that a rockfill dam probably could have been located about 200 feet upstream.

Presence of sulphur water at the dam indicates crevices and seams in the dam foundation, Cremer reported. Grouting has improved the condition but the improvement probably is temporary, he said, and there is danger of too much grouting and consequent weakening of the foundation, he said.

Loring then introduced the fact that grouting had been carried on for about 10 years at Boulder dam. Cremer declared the two were not comparable because Boulder has a fine foundation.

During questioning on Cremer's suggestion that the apron be expanded, Loring asked the witness if he considered it good engineering practice to recommend spending a client's money in the sum of $50,000 to $100,000 before a study is made. Cremer said he personally feels the apron should be expanded. He said he had suggested to supervisors that they call in a competent engineer to make a study on this and other matters.

Laughter Peps Up Matilija Dam Trial

2-17-49

Geologist Testifies:

1949 Bailey Takes Stand

2/17/49

GEOLOGICAL conditions encountered at Matilija damsite and in the adjacent areas were being described in superior court today as Dr. Thomas L. Bailey, geological consultant, took the witness stand for the Ventura county flood control district in its action against the Donald R. Warren company.

Dr. Bailey was giving court reporters a rough time as he whipped off geological terms in his southern accent.

DESCRIBES FORMATIONS

Dr. Bailey described earth formations in the Matilija damsite area as strongly deformed and said he was unable to find any stratification that connected from the right to left abutment.

He explained to the court a prepared and published diagram. Dr. Bailey said he had not worked on this particular study but had assisted with an earlier one. He said the symbols on the diagram indicated that a fault passes through Matilija damsite. The symbols show that the damsite area appears to be bent into an "S" and that the damsite is the center of the "S," Dr. Bailey said.

He reported that he had not felt sure of a fault when he assisted with an earlier study but had recognized the possibility of there being one because the materials on the two sides of the canyon did not match.

VISITED DAM SITE

Preparatory to giving more detailed information of earth conditions he found at the damsite during progress of the dam-building program, Dr. Bailey told of making visits at the dam from the time of October 1946 to September 1947. He said he saw a little of the excavation on the right abutment at the time of his October 1946 visit. There was some crushed sandstone there, he said, but he made no analysis of it.

His geological work with the Shell Oil company during more than 20 years and his work as an instructor in geology were described by Dr. Bailey as he qualified himself as an "expert witness" for the district.

In his outline, he indicated that he has taken numerous core borings and that about 4,000 cores were taken in the Goleta oil field area by Shell Oil company. He said he located the southern portion of the Goleta gas field for Shell.

Wayne Perkins, engineer in su-

(See STATE page 2)

State Engineer Testifies on Matilija

(Continued from page 1)

pervision of dams for the state, was whisked through both direct and cross-examination yesterday afternoon.

Perkins testified about foundation materials around "N" and "M" blocks. He said he visited the dam March 18, 1947 to pass on the pouring of concrete at "N" block, if conditions warranted it. A portion of "M" block already was poured, he said.

Perkins said he told Warren and other of his representatives present on the inspection tour that the material in the vicinity of "M" and "N" blocks would have to be cleaned up and more thoroughly investigated. He said a somewhat heated discussion ensued.

Warren was impatient with the delay and thought it was important to get the block poured, Perkins testified.

Perkins declared he did not think he had told Warren he could pour on "N" block and that he had no intention of giving Warren that impression. He said he directed that fragments embedded in clay be removed.

VISITED WARREN

Perkins reported he visited Warren at his Los Angeles office the next day, again asked him to clean up the material more thoroughly and received an answer that Warren would do so.

He learned on May 28, 1947 from William Holmes, of the state division of dams, that "N" block had been poured upon, Perkins said. He said Holmes gave the order to have the material removed from under "N" and that later he and Holmes required the removal of material from "O" block.

Under cross-examination, Perkins admitted he could not remember word for word what was said at the March 18 inspection. He also reported that the state does not give pouring orders in writing but gives them orally in the field.

As a direct Warren witness, Perkins testified he did not believe keying of abutments, as recommended by Engineer Randall Cremer, was desirable in a concrete arch-type dam. Keying would tend to fracture rock, open up seams, cause leakage and weakness, he said. He also said he believes concrete at the dam is properly bonded to the foundation.

BONDING UNNECESSARY

He was asked by S. V. O. Prichard, the district's attorney, if concrete poured against small angular pieces of rock would bond only to the first layer and not to any underlying rock. He said such procedure would be correct but contended that it is unncessary for a concrete arch-type dam to be bonded to its foundation.

he did not so testify. Charles Loring, Warren attorney, said the record would speak for itself. Prichard said he was willing to stand on the record.

Perkins testified after Cremer, who had been on the witness stand since last Thursday. There was argument about Cremer's testimony in regard to a picture showing the downstream portion of the dam at the time of the apron excavation. The Warren attorneys, verbally and by colored slides, contended Cremer had identified concrete as crushed material.

Cremer said he would have been in error if he had done so but said

2-17-49

Bailey Explains Coring

2/17/49

CRUSHED material found under Majilija dam by core drilling could be washed away when the reservoir water level is raised.

That was the opinion expressed in superior court yesterday by Dr. Thomas L. Bailey, geological consultant appearing as a witness in the Ventura county flood control district action against the Donald R. Warren company, designer of the dam.

After the morning session had been spent looking at cores taken from several holes, Dr. Bailey detailed the kind of material recovered from the various holes drilled beneath the dam. His testimony showed that there are great thicknesses of crushed material underlying the dam, such material being found especially at blocks D-G and some in K.

BREAKS DOWN

This material breaks down in water and would be subject to piping, Dr. Bailey said. He also pointed out that during drilling of core holes there was evidence of water passage. Water, both sulphur and cold water, was encountered, he said. He also told of an experiment to find out if the water found under the dam proper was coming, in part, from the reservoir.

A compressed air test was conducted at K block after a hole had been drilled to a depth of 69 feet. The air test was tried after lots of shattered sandstone and a five-gallon-per-minute flow of cold water was encountered, Dr. Bailey said.

The compressed air injected into the hole geysered in a pool upstream of the dam and on the surface of the reservoir water within a few seconds. The test was made after the Warren company had left the Matilija dam job, Dr. Bailey reported.

CAVITIES COULD FORM

Crushed material, plus cave-in situations encountered during core drilling operations, indicate that large cavities could form under the blocks, Dr. Bailey said. He said he saw no reason why such information could not have been obtained by core drilling from the surface prior to the design of the dam. Such drilling would have revealed fractures; over 90 percent and probably 99 percent of the fractures and fragments could have been discovered, Dr. Bailey said.

He told about trouble encountered with coring at block D, how more than 600 sacks of grout were dumped in the hole and how it disappeared. This indicated the possibility of their being a cavity nearby, Dr. Bailey said, pointing out the grout had to go somewhere. Such a cavity would be caused by piping, the geologist contended.

Dr. Bailey also explained about water being encountered during the drilling of some of the core holes. At block F, for instance, considerable water began to flow from the hole.

In drilling operations under G

(See GEOLOGICAL, page 2.)

block, no cores were recovered to a depth of 24 feet, Dr. Bailey said. He believed cave-in of fragments had caused this. A second hole was drilled at the block and after completion, sulphur and sometimes muddy water began flowing from the hole, Dr. Bailey testified. It was his opinion that some of the water was flowing from the reservoir; such a fast flow indicated channeling and not percolation, he contended. The muddy water indicated presence of crushed material, he said.

CAVE-INS FOUND

Cave-ins and water also were encountered at H block. The first hole there was drilled to a depth of 18 feet, with only a few fragments recovered. Special cement was put in, but no trace of cement could be found afterwards below the concrete of the dam, Dr. Bailey reported.

When operations were suspended, there was sulphur water evidenced, Dr. Bailey said. When the hole later was drilled to a depth of 62½ feet, a flow of cold water was encountered, Dr. Bailey said. He thought the cold water unquestionably was from the reservoir.

He also told how a second hole was drilled under H block to a depth of 63 feet. It then was grouted and then drilled to a depth of 100 feet. Dr. Bailey said that quite a bit of grout was discovered and that the grout had done a fairly good job of stopping leaks.

At 5-I, Dr. Bailey said, there was a cave-in encountered, there was crushed, shattered and fractured sandstone. Recovery was incomplete. Just eight inches away, another hole was drilled under the same block. The hole was drilled to depth of 67 feet, with sulphur water being encountered, the geologist reported.

Operations were suspended while grout was injected. When the hole was redrilled, Dr. Bailey reported, no solid grout could be found. This indicated to him that water had been channeling through the grout core or that the grout had drained out. The hole was drilled then to a depth of 100 feet. At that depth, cool water was found, Dr. Bailey said. He thought some of the water found in the hole was from a spring but that part was from the reservoir.

SAME CONDITIONS

When J block was core drilled, cave-in conditions were encountered, Dr. Bailey declared. He said that water and shavings from the core hole came up in an open grout hole that was about five feet away at the foot of the left abutment.

Another hole was drilled under the bloc, cave-in conditions were encountered, grout was injected and the hole was redrilled. Many cracks were filled with grout between 20-40 feet; there were a few grout seams lower, one being one-third of an inch thick, Dr. Bailey said. When the hole was redrilled to a depth of 100 feet, warm sulphur water flowed. By its flow, it indicated channeling, Dr. Bailey declared, adding that location of the springs must have been in the lower part of the hole.

Dr. Bailey said most of the core holes were drilled while the Warren company was still on the job, that the company had charge of grouting and drilling of the core holes but that he, himself designated the place of drilling.

2-18-49

Matilija Cores Shown

2/18/49

ONCE again, a portion of the Matilija dam action is being held outside the courtroom.

This morning and yesterday afternoon court was conducted by Superior Judge L. N. Turrentine on the sidewalk behind the courthouse.

The outside session was set up to allow the judge to view and hear explanations on types of earth formations taken from be-

In a water test conducted in court this morning, a sample from a core test recovered 10 feet below the base of Matilija dam, had dissolved in less than an hour.

Dr. Thomas Bailey, geologist, called as a plaintiff's witness, placed the sample of material in a jar of water at 10:09. At 10:31, Bailey told the court that the water was muddied and some sand had settled to the bottom of the jar. By 11 a.m. Bailey poured out the contents of the jar and said it was a soft, muddy mixture of sand and water. Only a few fragments had not dissolved, he said.

neath the dam during core drilling operations during the latter part of 1947 and the first part of 1948.

CORE DESCRIPTION

Court moved outside after Dr. Thomas L. Bailey, local geologist called as a Ventura county flood control district witness against the Donald R. Warren company, had described cores obtained during the drilling of 22 holes from the right to the left abutment of the dam. Dr. Bailey, who supervised the core drilling operations, said most of the holes drilled went below the dam proper.

Only a part of the cores were exhibited. These, Dr. Bailey said, were representative of the different kinds of material found in core drilling under the dam. At the out-of-doors session he showed and explained cores recovered from holes drilled near the right abutment, holes 8-C and 7-D.

DR. BAILEY EXPLAINS

Answering questions of both the district and the Warren side, Dr. Bailey said there was little fractured material and no crushed material cored in the first 20 feet below the dam in hole 8-C. There was no evidence of bonding of concrete to the earth material, but not all the concrete was recovered, Dr. Bailey said. He said the core bit might have been moving when this section was cored. He reported he saw no evidence of a grout curtain material cored from this hole.

Stanley Burrill, one of Warren's attorneys, wanted to know if a fracture on one section of rock recovered might have been caused by coring. Dr. Bailey replied no, it was an old fracture. Then he broke the formation apart at the fracture, exhibiting to Burrill the fracture lines shown within the split-off section.

Dr. Bailey also had the court look at cores drilled from hole

(See MATILIJA, page 3)

Matilija Dam Trial Moves Outside to View Core Exhibits

(Continued from Page 1)

7-D. The material just below the concrete was sandstone that had been crushed to powder, Dr. Bailey said. He demonstrated by breaking off a crushed section and blowing about powdery-like looking particles.

Burrill wanted to know if any bonding with the crushed material was shown. Dr. Bailey said there might be some but there was no effective bond. Dr. Bailey also exhibited material taken by coring which he said showed movement of a slip plain. This material, about 20 feet below the dam, breaks down in water and becomes muddy sand, Dr. Bailey declared.

DR. BAILEY EXPLAINS

In the regular court session, Dr. Bailey explained that three holes were drilled at D block of the dam. The first hole took more than 600 sacks of cement when it was grouted, Dr. Bailey said. He reported another hole was put down eight inches away from the first to try and get deeper under the dam and to try and find out where the grout inserted had gone. There was no grout recovered in this second hole, he said. A third hole was drilled between the other two holes. It showed mucky, soft, crushed sandstone but no grout, said Dr. Bailey, adding that it was his conclusion that "piping" at that time had started under the dam at this section.

Dr. Bailey, using a chart and a log, explained how three core holes had been drilled in the right abutment and 19 below C-M blocks under the dam. (Blocks are lettered alphabetically from the right to left abutment.) In some holes, there was evidence from cores to show there had been bonding of concrete and earth material; in some there was little or none, he said. He added that grout was observed in some cores but that in none of the holes did he see more than 30 percent of the holes filled with grout.

He explained core recovery and his findings from the right to the left abutment as follows:

Holes at right abutment, good rock recovery; 6-E—bonded and then broke away; 1-F—no bond just below concrete; 2-G—no recovery of core, hole had to be redrilled; 9-G—no bond, no solid core; 3-H—no bond; 5-1—few loose fragments; 10-I—well bonded; 4-J, 11-J—good bond; 15-K—well bonded, below was section of foot where no material recovered; 16-K—no bonding, loose fragments; 17-L—incomplete recovery indicating no bond; 19-L—bonded but section below where no recovery; 18-M—solid sandstone, bonded.

Dr. Bailey also reported that he had seen the material below the dam proper when the apron area was excavated. He said he was "amazed" to note the character of the material under the dam, explaining that the material was softer toward the right abutment and then grew stronger toward the left abutment.

SAW SPRINGS

He said he had seen both gouge and crushed sandstone and that he also had seen springs, one near the foot of the left abutment and one near the foot of the right abutment. All of the water had sulphur in it; some of the water was hot, some was cold, Dr. Bailey reported.

From his observations, he said, he concluded there was a fault in the general area of the damsite. The fault could have been discovered by core borings taken from the earth's surface before the dam was built, Dr. Bailey declared.

He also was shown samples that have been identified in court as having been taken at the time the area was excavated for the dam proper. Dr. Bailey said he had seen similar material in his own observations. One of the samples, taken from about 40 feet from the right abutment, shows material that will break down in water, Dr. Bailey declared.

2-21-49

Geologist in Court:

Berkey Testifies In Trial

2/21/49

Eighty-two year old Dr. Charles P. Berkey, consulting engineering geologist and professor emeritus of Columbia university, went on the stand in superior court today to testify for the Ventura county flood control district in its action against Donald R. Warren company over erection of Matilija dam.

During the morning session, Dr. Berkey recounted his experiences on dams and water projects in qualifying to testify for the district as an expert witness.

DESCRIBES EXPERIENCE

Before he finished, he indicated he has been on consulting boards for all the large water projects of the United States bureau of reclamation since 1928, and has worked on projects for the development of water supplies in New York City, Hartford, Boston and Philadelphia.

Dr. Berkey told of being appointed by President Calvin Coolidge in 1928 to serve on a five-man consulting board to develop possibilities of building Boulder dam. He was one of two geologists named to the board and the only engineering geologist on the board.

Reporting that he had worked on the Boulder dam project from then until the present time, Dr. Berkey said the board was the first one commissioned that placed geologists on an equality with engineers. From the appointment of that board on, there has seldom been an advisory board that has not included geologists, he declared.

He also told of being named to work with the United States reclamation bureau on such projects as Grand Coulee and Shasta dams and the Tennessee valley authority projects.

CHOSE TUNNEL SITE

He told of working, in that regard, on New York city's Catskill system, which by dams and tunnels carries water to New York City. During that project, Dr. Berkey said, he chose the site for the tunnel crossing of the Hudson river. He explained that the site was tested before the tunnel was built and that the depth for the tunnel was determined after diagonal core drilling.

He also told of working on dam projects in North and South Carolina and on Tigert dam, West Virginia, a dam on which Engineer Randall Cremer also was associated, according to his testimony for the district.

Dr. Berkey was placed on the stand this morning ahead of his scheduled time to allow his return to his home in New Jersey to keep an appointment. He followed Dr. Thomas L. Bailey, consulting geologist, who will return for cross-examination later this week.

Dr. Bailey testified that from his observation of material that could be seen from beneath the dam when the apron was excavated, and from evidence obtained in core drilling he concluded the Matilija dam was built across a fault zone.

2-22-49

Berkey Still On Stand

2/22/49

DR. CHARLES P. Berkey, the Ventura county flood control district's engineering geologist consultant, was questioned about his inspection visits to Matilija dam at today's session of the district's action against the Donald R. Warren company.

Under cross-examination, Dr. Berkey was asked about his forming an opinion in May 1947 that a fault traversed the damsite. Nobody has seen the whole fault, he said, but declared that he saw enough of earth movement and deformed material to convince him of its existence.

On a couple of occasions Dr. Berkey offered to show Defense Attorney Stanley Burrill such evidence in the field. Burrill ignored the suggestions. In addition, Dr. Berkey said, he had been shown samples of the foundation formation, one such sample being given to him by Warren company employes and one by Vern Freenan, Santa Paula engineer.

Before Burrill began questioning Dr. Berkey about obtaining information on various dams and water projects on which the consultant had worked, Dr. Berkey conceded there had been formation troubles at Friant, Parker, Grand Coulee, Bonneville and Davis dams and with the Mono crater tunnel.

The matter of correspondence between Dr. Berkey and County Surveyor Robert L. Ryan arose again today. Warren's attorneys, who had received the court's permission to inspect the correspondence, said the letters turned over to them indicated some correspondence was missing. There were, they said, also references in the letters that indicated Dr. Berkey had been sent letters and progress reports from Dr. Thomas L. Bailey, Engineer Randall Cremer and Frank Bonner, design consultant engineer called in by the district to review Matilija.

S. V. O. Prichard, the district's attorney, said he knew nothing about any other documents. He protested their introduction as an invasion of privacy and said he would ask for all personal correspondence between Warren and his geological consultant, Dr. John P. Buwalda, if the Ryan-Berkey letters were ruled admissible. He said he had never been given the Buwalda-Warren letters.

Warren's attorneys said Prichard never had asked for such letters. Prichard said he would ask for them now.

Prichard also declared that if the Warren company wanted any more documents indicating correspondence between Ryan and Dr. Berkey its attorneys would have to lay the legal foundation for introduction of such material. The court indicated the attorneys would be given opportunity to do so.

Cross-examination of Dr. Berkey began today after he had spent

(See MATILIJA, page 3)

yesterday's entire session directly testifying for the district.

DIRECT TESTIMONY

His direct testimony showed that he believes there is a fault zone which crosses the damsite, that there is poor material underlying the dam, that such material might easily endanger the dam structure that the damsite was an improper site for erection of a concrete arch-type dam and that he does not believe that grouting will bring about consolidation of material on which the dam rests.

During his testimony, Dr. Berkey answered hypothetical questions, based on testimony presented at the trial. He left no doubt that he considered the methods followed in building the dam as poor engineering practice.

After a hypothetical question was framed, outlining the exploratory work that Warren purportedly followed in preparing and presenting plans and specifications for Matilija dam, Dr. Berkey answered that the exploratory work would not have been adequate to good engineering practices.

Dr. Berkey contended exploratory work is essential in any dam construction and is needed in a concrete arch-type dam because "concrete disintegrates in our soil —much to our sorrow."

CRITICIZES ENGINEERING

Dr. Berkey also contended it would be poor engineering practice, as set forth in the district's complaint, to design a concrete arch-type dam on the basis of assuming that bedrock would be suitable and economical for such a dam and that adequate bedrock would be encountered at an assumed rockline.

Such a practice, he said, would give no evidence whatever of the quality of the foundation of the dam. In his experience, Dr. Berkey said, he had never seen work as important as Matilija dam undertaken without explorations of a rather elaborate sort.

In the case of Matilijt, he declared, there was extreme reason for being cautious. Any trained person could see without difficulty the deformation of the earth at the Matilija damsite, he said. From visual observations in May, 1947, he could conclude there was a fault that traversed the damsite and that the earth formation was broken up, ground up, crushed.

The stripping of one abutment to expose the surface edge together with the sinking of one test pit at creek bottom would not be adequate exploration for the Matilija damsite, Dr. Berkey said.

SAW IT IN '47

The engineering geologist told of viewing material in May, 1947, at "N" and "M" blocks when concrete-pouring was stopped for mining out of poor material encountered. He said he observed broken and ground up rock transected by gouge streaks. The amazing thing, Dr. Berkey said, was that any engineer had allowed any concrete to be poured on the material. That material ought to have been removed before any concrete ever was placed on it, he declared.

FORMATIONS AT THE SITE

Samples and the cores showed broken, shattered, crushed or sugary material, he said. He said it made no difference whether the amount of such material under the dam is great or small. No matter where the crushed material is, it could be reached by water, Dr. Berkey declared. "A weak link anywhere is a bad link; this is a bad link; the bad link is the quality of the ground."

According to Dr. Berkey, the Matilija damsite is not proper and adequate for the construction of a concrete arch-type dam. Because of the "quality" of the foundation, he would have advised two things, he said. He would have preferred a rockfill or earthfill dam, if a dam "had to be built" at the site, and he would install a cutoff wall, he said.

ATTORNEYS ARGUE

Two documents went into the record without comment after Dr. Berkey had testified he had recommended, when named to the district's consulting board, that core drilling be taken at the damsite. Warren's answer to Dr. Berkey's recommendation and Dr. Berkey's answer, in turn, to Warren were placed before the court without comment.

Over protests of the district's attorney, S. V. O. Prichard, Warren attorneys were given the right by the court to examine correspondence between Dr. Berkey and County Surveyor Robert L. Ryan. Warren's attorneys said knowledge of the correspondence had come to their attention when Ryan's deposition was taken. Attorney Stanley Burill said Prichard then had advised Ryan not to produce the letters. Prichard said no subpoena for the letters had been issued.

Prichard told the court he did not feel that the personal correspondence between Ryan and Dr. Berkey should be given to the Warren attorneys because they were only on a "wild goose chase."

He said he would not object if the entire correspondence were entered, as "there is nothing to hide." The court allowed inspection of the documents, with Warren's attorneys agreeing to Prichard's request that the documents be inspected in the courtroom.

2-23-49

Kier Recalled To Stand

2/23/49

JOHN KIER, project manager for the contractors during the building of Matilija dam, was back on the witness stand at today's superior court hearing of the Ventura county flood control district's action against the Donald R. Warren company.

Kier, who previously went through a long spell of direct and cross-examination, was called back to give re-direct and further cross examination testimony. His "siege" on the stand previously had to be interrupted because of a trip to Nebraska to inspect a dam.

Local coarse rock aggregate was not used on the dam job because the aggregate would not meet test requirements, Kier said. He also gave further detail on requests for labor claims over and beyond the contract. He said there was a variance in the figures submitted between the first and second claims because the second claim took in a longer period of time and included cleanup work after several storms, Kier testified.

He also reported that he never remembered any specific conversation with the Warren company to dig in the keyway, fill in with concrete and to leave before the floods came. Kier said the orders from the Warren company in September 1946, when excavation was underway, told contractors to leave the apron excavation until later and that the Warren company thought such a plan would speed up work.

The contractors were not told at that time, Kier said, that the engineering company planned to go below elevation 960 in excavation, but excavation ultimately did go lower.

Before Kier took the stand, Defense Attorney Charles Loring, as requested by the district, turned over for inspection correspondence between Warren and his geological consultant, Dr. John P. Buwalda.

Examination of Dr. Charles P. Berkey, the district's engineering-geologist consultant, concluded yesterday afternoon.

Dr. Berkey was questioned about a meeting of state and Warren officials in May 1947 after concrete pouring had stopped at "N" and "M" blocks. He said he concurred with the general procedure outlined at the meeting for completion of the dam but said the program applied to the left abutment and upper right abutment, not to foundation materials at the bottom of the canyon.

DENIES STATEMENT

Dr. Berkey denied he said at the meeting—or anytime—that a major fault does not cross the damsite..

The district consultant admitted he could not see the floor of the dam when he visited the site in May 1947 because of concrete pours and that he had not examined the state files nor visited the Warren company Los Angeles office.

He said he talked to state, Warren and district men but considered that John Southworth, former Warren employe who testified for the district, had the most

(See BERKEY page 2)

Wednesday, February 23, 1949

2-23-49

Berkey Denies Making Remark That No Fault Crosses Damsite

(Continued from page 1)

reliable information. Southworth, he said, had been on the job and seen the material.

Dr. Berkey also reported that he had seen and examined most of the cores. He said he considered the material-melting test made during court was a fair test because it showed behavior of the material.

He was cross examined about an oral report to district supervisors about grouting and his statement that no grout curtain stops everything, that there is no end to a dam and that he did not think the weakest material was very pervious.

That was true, Dr. Berkey said, except that he had not said the material was not pervious.

BERKEY DISAGREES

Defense Attorney Stanley Burrill showed Dr. Berkey results of a salt test at the dam in 1948, taken after the Warren company had resigned. He offered it as evidence the dam is not leaking under and through the dam. Dr. Berkey didn't agree; he said water samples had been taken during the salt test and therefore water was coming through. It makes no difference whether or not it was spring water, he said, it was still coming through.

Dr. Berkey said the dye and salt tests made at the dam had been reported to him as showing somewhat favorable tightening of the dam. That meant the water was only leaking less, he said. He also reported that part of the reservoir had been treated with bentonite to close up cracks and to keep water from coming through the dam.

He declared he was not very critical of the grouting program done by the Warren company; he said both the Warren and district grouting programs had indicated the most deformed material doesn't take grout successfully. A sure method of protecting the poor material was to install a cutoff trench, he said.

In all his experience, Dr. Berkey said, he had never seen a dam with such material as Matilija constructed without a cutoff trench upstream. It was his opinion that Matilija's formation could have been successfully crossed if it had been treated.

He said his own opinion on Matilija and the material on which the dam rests has been a progressive story. The opinions he expressed in court were "up to the minute" and "included everything from beginning to the present time."

"Hindsight is better than foresight?" Burrill asked him.

"Yes, it usually is," Dr. Berkey declared.

UERIED ABOUT LETTERS

Dr. Berkey reported that absence of rock from cores usually indicates poor rock, a cavity, that the material is poor enough to be ground up or washed out. If rock is strong but brittle it has a tendency to break up but is not lost, as bad material is, Dr. Berkey said.

He contended that core holes at the beginning would have led to discovery of sugary, powdery material and fractures and broken material.

Before the doctor left the stand he was questioned about letters between himself and County Surveyor Robert L. Ryan. The questioning was done despite renewed protest of S. V. O. Prichard, district's attorney.

In making his renewed objection, Prichard said he apologized for an outburst at the morning session when he charged entrance of the letters was an invasion of privacy. He said he had been upset because the defense, in indicating some of the letters were missing, had implied concealment.

The county surveyor's office, Prichard said, had been kept open late Monday night until after the defense had read the letters; no additional information was sought by the defense, Prichard declared, until yesterday morning when the surveyor's office was closed for the holiday. He said if any letters were missing they would be added.

The Warren attorneys then asked Dr. Berkey about three communications. They asked if, in saying "it is a very unusual kind of problem because the real difficulties were obscured," he were referring to the conditions at the river bottom. Dr. Berkey said he had so intended but that he did not think obscurity excused anyone from curing problems.

He identified Dr. Thomas L. Bailey and Engineer Randall Cremer as the men mentioned in a letter that said, "you have two good men in your own locality."

He was read a statement from a Ryan letter: "Evidently the Warren company has come to the conclusion also the material doesn't take grouting in appreciable quantities and won't stay up under water." He was asked if he relied on that statement for his opinions. He replied he had not, that he believed he could sift things out for himself.

2-24-49 - Thursday

Tempers Get Hot As Bailey Is Questioned

2/24/49 - Thursday

Tempers became frayed today in superior court during cross-examination of Dr. Thomas L. Bailey, consulting geologist for the Ventura county flood control district, in the district's suit against the Donald R. Warren company over Matilija dam.

A dispute broke out over where Dr. Bailey had seen crushed, white material underneath the dam when the foundation was exposed to view after excavation of the dam's apron.

PHOTOS SHOWN

Stanley Burrill, one of Warren's attorneys, asked Dr. Bailey to identify on photographs the material he had observed in the apron area toward the right abutment on Aug. 13, 1947. Dr. Bailey identified hard material but declared that the area of white, crushed material continued out of and to the right of the photograph. He said he did not believe the picture showed the exact view.

Burrill persisted in trying to get Dr. Bailey to draw in the area of soft, crushed material on one picture. He wanted to know if Dr. Bailey had testified on direct examination that he had seen the base of the dam at the right abutment and adjacent to it.

Dr. Bailey said he had so testified, that he knew he had definitely seen the area beneath the dam in vicinity of C to J blocks. He also pointed out he had reported he believed one of the apron blocks had been poured at the time of his visit Aug. 13. He said he was sure he had seen the material under the dam near C and D blocks.

NO IDENTIFICATION

He said he could not say by looking at the picture, identified as an Aug. 12, 1947 photograph, whether he had seen beneath the dam in the area depicted or whether it was within three or four feet of the downstream side of the dam. He admitted he was hazy about that spot.

Burrill asked Bailey if he had talked with S. V. O. Prichard and M. Arthur Waite, the district's attorneys, about the matter since his direct testimony and before start of cross-examination.

"I don't think I did," Dr. Bailey replied.

He was then asked if "his side" of the case had pointed out he had testified to something he had not seen.

"They did not," Dr. Bailey replied, flushing red.

At that point, the judge called recess.

John Kier, project manager for the Matilija dam contractors, was

(See MATILIJA, Page 3)

Matilija Manager Questioned On Claims for Extra Work

(Continued from Page 1)

excused from the stand yesterday afternoon after day-long questioning about contractors' claims for extra work and materials and about methods of operation.

During the day, Kier drew several illustrations to show his contention that changes of plans by the engineer forced the contractors to shift operation procedures.

DISTRICT OBJECTS

Over the objections of the district, Kier was questioned about a $9,000 claim for extra excavation, paid for by the district in addition to $86,000 in other claims. The $86,000 is sought for recovery in the Warren company action but the $9,000 claim is not a part of the recovery action.

Kier said there was a divergence of opinion between the contractors and the engineer's men over whether the $9,000 figure for the excavation had been correct. Neither side admitted errors in the computation, he said, adding that John Hallock of the Warren staff had declared he was not going to pay the contractors for more than 100,000 yards of excavation.

He said he did not know whether representatives of the two companies had discussed the matter after he and Hallock talked but were unable to reach an agreement.

DISCUSSES DRAWINGS

Kier said Warren on Oct. 25, 1946 told the contractors the foundations were ready for pouring and that the contractors made preparations to pour. It was his understanding, Kier said, that the contractors were to receive certain drawings from the engineer as soon as the state gave approval for pouring.

State men visited the dam on Oct. 25 and came back later for another conference, Kier said. Afterwards, he declared, the contractors were notified by Howard Taylor of the Warren staff that the state had approved pouring on Nov. 3. Pouring started the next day, Kier said. In the interim, contractors had been making preparations for pours. Kier said the drawings from the Warren company were received a few days before pouring started and that pouring would not have started until such data had been received.

Kier presented to the court insurance records that showed premiums carried by the contractor as $10,040 and amount recovered for flood damage as $18,000. He said the insurance paid to the contractors did not cover the same items the contractors sought flood damages in their claims.

During questioning, Kier said relations between the contractors and the engineer, outside of the agreement on claims, were friendly.

2-25-49

Bailey Quizzed On Leaks

2/25/49

DR. THOMAS L. BAILEY, consulting geologist for the Ventura county flood control district, was questioned about the results of leakage tests taken at Matilija dam during this morning's superior court session of the district's action against the Donald R. Warren company.

He was queried about an air test, made after the Warren company was discharged, to check on flow of water. Dr. Bailey said the core hole into which the compressed air was inserted was open and that it extended at some depth underneath the dam and reservoir at the time of the test.

LEAKAGE SHOWN

Some core holes were open when the district took its dye test and some leakage was shown, Dr. Bailey said. He admitted that when the salt test was made later core holes and grout holes were grouted and that no evidence of salt was found downstream of the dam.

Stanley Burrill, one of Warren's attorneys, also questioned Dr. Bailey about the statements of A. W. Simmonds, grout expert called in by the district. Dr. Bailey admitted that Simmonds, in an oral report to district supervisors, probably had said that the grouting program at Matilija was not unusual, but declared that in the field Simmonds had shown surprise at the crushed material, that he had tried samples from the cores and had found the material dissolved in water.

Burrill spent most of the rest of the morning querying the geologist about a "pleasure trip" he had made to the damsite with the Ventura Engineers club in October, 1946.

He wanted to know if Dr. Bailey on that trip had seen two blocks completely excavated. Dr. Bailey replied that he was not sure whether one or two blocks had been completely excavated but that he had seen some framework.

RECALLS TESTIMONY

"Didn't you testify on your January, 1949, deposition that you had seen two blocks excavated?" Burrill asked. Dr. Bailey answered that he had not seen or been given his deposition to sign, and a check by court officials proved this to be true.

Burrill then read portions of the deposition that showed Dr. Bailey had said two separate forms for pouring had been placed around adjacent excavations near the right abutment. Dr. Bailey answered he had so testified but that he believed there was only one block completely excavated for pouring.

Since the blocks were poured alternately on the dam, would not the forms have been placed around "C" and "E" blocks at that time rather than at adjacent "C" and "D" blocks, Burrill asked? Dr. Bailey contended he thought the forms had been placed by "C" block, near the right abutment but he admitted he might have been mistaken. He declared, however, if block "E" had been opened up to total depth of excavation he would not have probed in that area because workers were on the job. He said the way he remembered the situation the deep excavation was around "C".

During this morning's session, Burrill again tried to get Dr. Bailey to identify material in the dam's apron as shown in a photograph. He asked for location of a black shale gouge. Dr. Bailey said the material shown in the photograph was too faint and refused to mark in any lines.

Dr. Bailey was steadily questioned during yesterday afternoon's session by Burrill on topics ranging from location of the damsite fault to "engineering phases."

(See BAILEY, Page 2)

Burrill stiffly questioned Dr. Bailey about his indications on a map used in direct testimony of fault zones curving downstream from the dam and apron.

NOTES COMPARED

Burrill pointed out that Dr. Bailey's notes of Aug. 13, 1947 did not mention downstream curvatures mentioned in his Aug. 23 notes. Dr. Bailey said that on one of his two visits during that period he had climbed high on the dam to look down and that he had noted the curavtures in the apron excavation area.

Dr. Bailey said he might have projected the fault zones farther downstream on his newest map, made about two months ago, than on previous maps and farther than he could see. Dr. Bailey said, however, he had further information when he made his latest map: he had seen outcroppings at a sump hole and core holes had been completed when his newest map was made.

OPINION CHANGED

Burrill showed Dr. Bailey a 1947 report the geologist had made to district supervisors in which crushed sandstone, shown in the fault zone, was described. Burrill pointed out the report said the material was somewhat impervious to water and that probably there would not be very bad leakage through the crushed zone.

Dr. Bailey said that was his opinion at that time but that it was stated prior to having materials tested. He declared he had just recently got the test analyses returned to him and that they showed the material was more permeable than he originally had thought.

Dr. Bailey admitted that when he made his report to the supervisors in 1947 he saw no sign of sagging; the crushed and shattered sandstone seemed to be supporting the dam. He declared, however, that after the material becomes thoroughly saturated it may become too weak to support the dam. This might take a long period, he said, adding that he was not worried about whether

The subject dealt with the fall of water from the dam onto the spillway and the undermining action it might have on the apron's edge.

Dr. Bailey said he had relied on E. E. Everett, local engineer, for that section of his report and that Everett had figured a storm of intensity of the year 1914 would send water over the dam in thickness of from four to six feet.

"Would you want to change your report if you found out that wasn't the fact?" Burrill asked.

Dr. Bailey reported that he thought there would be undercutting and undermining, that he thought there still was possible danger that the apron might wash out.

He was asked about his sugge tion to drill holes and have the filled with concrete if the crush sandstone beneath the dam wou not take grout. That was "pro ably a half-baked idea," Dr. Bai ey told Burrill, but he said thought such concrete-filled hol might stop an underground ca ity from spreading or enlargi if water started through the da The idea was not to provide su port for the dam, he said.

Expert Details Dam Soil

2/26/49

LABORATORY tests taken on earth samples from beneath and near Matilija dam show the material absorbs water, is weakened by absorption and has a higher percolation rate than is used for compaction cores on earthfill dams, according to testimony presented in yesterday's superior court session of the Matilija dam case.

The laboratory tests and description of them by an expert witness were introduced yesterday afternoon before the Ventura county flood control district-Donald R. Warren company action over Matilija dam closed down for a week's recess.

MORE TESTS DUE

Before the session was through, the Warren side had indicated it, too, would take laboratory tests of similar material. The session also saw S. V. O. Prichard, the district's attorney, appearing on the witness stand for a brief time.

Loring Tabor, a civil engineer, consultant and supervising engineer of construction for the department of water and power, Los Angeles, appeared as the district's expert witness. Tabor, who described his experiences in reaching his present status as "a working up process," said he had been associated with construction of five dams, had designed about five more and had tested materials, both earth and concrete, for about 15 more. Most of his work was with earthfill dams, he said.

REVEALS QUALIFICATIONS

He told of conducting tests on samples from Matilija dam, that were submitted to him by Prichard. He conducted tests on samples of material that had been obtained downstream of the apron edge and from a position about 12 to 16 inches below the surface of the apron. Before describing the results, Tabor said that on earthfill dams tests are taken to make sure that the rate of percolation, the degree of permeability will be low enough so that dams will be satisfactory.

In clay-type material, he said, percolation rate of .01 of a cubic foot per year is usually considered satisfactory. Solid rock should have less percolation than a clay blanket, he said. He also reported that path of percolation is usually longer on an earthfill than on a concrete arch-type dam.

Tabor reported that of the Matilija dam samples he tested only one sample had a percolation rate that would be of sufficiently tight consistency for use in compaction cores on an earthfill dam.

In his highly technical report, Tabor reported that one apron-area sample showed a percolation

(See LABORATORY, Page 1)

Laboratory Test Evidence Offered

(Continued from page 1)

rate reading after 30 minutes of 1.35 cubic feet per year and a rate of 4,010 feet per year after a three-hour testing period.

Another sample, Tabor said, did not deteriorate as badly but had a high absorption rate. He said the test showed the water had percolated through a fissure in the sample. It's percolation rate after a 30-minute test was 1.12 feet per year and after 10 hours 225 feet per year.

A third sample under testing showed absorption of less than .01 percent, a constant percolation rate under various lengths of testing and would have a percolation rate of less than .01 of a cubic foot per year, Tabor reported.

DESCRIBES TESTS

Tabor also described tests on material taken from beneath the dam at core hole 7-D, material of which previously had been shown to the court. The first sample was taken from a depth of 12 feet, about 18 inches below the concrete of the dam.

This material after testing for six hours had a percolation rate of 1.87 feet per year, Tabor said. He said he tried two tests on cored material taken from a depth of 23 feet. The first sample, he reported, disintegrated in water so no further testing could be done.

Tabor reported he placed filter paper beneath the next sample so there could be no such recurrence. At the end of six hours, this material showed a percolation rate of 17.6 feet per year; after the filter paper was removed the percolation rate in one hour's time had risen to 26.1 feet per year percolation rate, he said.

The water became cloudy when the filter was removed, signifying that much water was passing through the sample and carrying away fine-grained material, Tabor reported.

After his direct testimony, the Warren attorneys asked for samples so they could conduct tests. Tabor told them he thought he had sufficient unused material left for further tests to be conducted and that he would deliver the material to them.

BATTLE OF EXPERTS

Prichard suggested that Judge L. N. Turrentine name his own expert and have tests conducted if there was going to be "a battle of laboratory experts." The judge said he did not want to do so unless a definite conflict develops. He approved testing of the remaining materials by the Warren side and gave them the right to obtain material from the downstream edge of the apron if more tests are needed.

Tabor testified after Walter Loban, employe of District Engineer Robert L. Ryan, and Prichard had appeared on the witness stand to explain how the samples were turned over to the laboratory expert.

Loban said he had dug up between 20 to 30 pounds of material from a position about 10 feet downstream from the apron and out from "D" and "E" blocks of the dam. The samples were taken May 6, 1948 on order of Ryan, were crated and kept at the courthouse and then delivered to Prichard in Los Angeles on Dec. 30, 1948, Loban reported.

Prichard then took the stand to tell of his receiving the material and of his delivering it to Tabor for testing. He also reported that samples from core hole 7-D had been obtained by himself and Dr. Thomas L. Bailey, the district's consulting geologist, after the court had examined the cores. These were delivered within 24 hours to Tabor, Prichard said.

The results of the laboratory tests were introduced after Dr. Bailey completed testimony on direct and cross-examination.