NATIONAL FIRST-AID AND MINE RESCUE CONTEST COLUMBUS, OHIO, OCTOBER 2, 3, AND 4, 1951

BY W. H. TOMLINSON

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UNITED STATES DEPARTMENT OF THE INTERIOR
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W. H. Tomlinson[1/]

CONTENTS

TABLES

1/ Chief, Vincennes Branch, Accident Prevention and Health Division, Region VIII, Bureau of Mines, Vincennes, Ind.; secretary, National First-Aid and Mine Rescue Contest Committee.

CONTENTS (Cont.)

ILLUSTRATIONS

INTRODUCTION

The fourteenth National First-Aid and Mine Rescue Contest was held at the State fairgrounds, Columbus, Ohio, October 2, 3, and 4, 1951. The meet, the first such event in 21 years, was under the auspices of the Bureau of Mines, United States Department of the Interior, and the Joseph A Holmes Safety Association and was sponsored by the National Coal Association, the United Mine Workers of America, and various State mine-inspection departments. The cooperating agencies that contributed to make the meet a success, in addition to the National Coal Association and the United Mine Workers of America, were the Kentucky Department of Mines and Minerals, Ohio Division of Mines, West Virginia Department of Mines, Pennsylvania Department of Mines, and the Columbus Convention Bureau.

SUMMARY

Fourteen teams from 6 States participated in the mine rescue contest, and 55 teams from 9 States competed in the first-aid contest. Only one of these teams entered as a combination team, that is, participating in both the mine rescue and first-aid contests. The States represented and the number of teams from each State are listed in table 1.

TABLE 1. - States represented at Contest

State	Number of mine rescue teams	Number of first-aid teams
Alabama	0	2
Illinois	1	2
Indiana	0	1
Kentucky	7	17
Maryland	1	0
Ohio	2	5
Pennsylvania	1	5
Virginia	0	2
West Virginia	2	20
Wyoming	0	1
Total	14	55

The contest was conducted in accordance with the general rules prepared by the Rules Committee and approved by the full National First-Aid and Mine Rescue Contest Committee, the organization established to set up the conditions under which the contest was to be held. The National Contest Committee was established at a conference called March 22, 1951, by Dr. James Boyd, then Director of the Bureau of Mines, Washington, D. C. In addition to Bureau of Mines personnel, the committee was composed of representatives of the National Coal Association, State and local coal operators associations, the national and district offices of the United Mine Workers of America, local State mining institutes, and State departments of mines, insurance

companies, coal companies, and others. A complete roster of the names of all National Contest Committee members appears elsewhere in this report, and a copy of the general rules is included in appendix A.

At the time of the organization of the parent committee, it was anticipated that if the meet was to be a success an energetic and active publicity committee would have to be set up. This was done, and the committee functioned immediately and kept the public informed by radio recordings and articles in newspapers and magazines, particularly those circulated in States that would likely (and did) furnish most of the teams. There were some preweek television programs featuring some of the team members. Television coverage also was arranged for the awarding of trophies and other prizes after the contest.

Publicity within the Bureau of Mines, principally between the various regions, was handled by the respective information officers. The Federal Civil Defense Administration also assisted the National Committee in publicizing the meet outside of mining circles; in fact, the Administrator of this Federal agency designated the national contest as the "greatest safety show on earth." The Congressional Record carried an article containing the remarks of Hon. Augustine B. Kelley, Congressman from Pennsylvania, praising the national contest as an inspiration to everyone to practice safety.

In addition to the foregoing, the national contest secretary kept the participating teams and companies fully informed, through the various section and branch chiefs in the several regions of the Bureau, regarding all matters in connection with the meet.

OUTSTANDING FEATURES OF THE CONTEST

The race track at the fairgrounds was an ideal place for holding the mine rescue event. Space was available for virtually any number of teams, and the adjacent grandstand offered unlimited seating capacity. The space (rooms) under the grandstand was ideal for holding the preliminary examination and for confining the teams until called to work the problem.

Likewise, the Coliseum was an excellent location for the first-aid contest. The building was admirably suited for the purpose and would have accommodated the 56 first-aid teams that were registered but no more. (Fifty-six first-aid teams registered, but one did not come.)

Although the contest was well advertised, the attendance, as usual at such demonstrations, was quite small, only 500 persons being present at the mine rescue contest and not more than 1,000 at the first-aid contest.

The address of welcome at the beginning of the mine rescue contest, by Hon. George Ney, Lieutenant Governor of Ohio, and that of Hon. Frank J. Lausche, Governor of Ohio, at noon, October 3, were also features of outstanding importance during the meet.

RECOMMENDATIONS FOR FUTURE CONTESTS

Although both the mine rescue and first-aid contests, particularly the latter, functioned smoothly, some dissatisfaction and complaint were voiced in connection with the mine rescue event. It is believed that the following recommendations, if adopted for future contests, would limit the opportunity for complaint.

General Recommendations

1. Establish a permanent organization for conducting national and international contests.

2. Reduce the size of finance and publicity committees. Neither committee should have more than 10 to 12 members.

3. Hold national or international contests at least 2 years apart.

4. Continue as at present to take 3 days for the meet, 1 for mine rescue and the other 2 for first aid.

5. Continue to restrict the judging in both events to Bureau of Mines representatives.

6. Train Bureau men in uniform judges' course in advance of each meet.

7. Provide uniform training of teams, both mine rescue and first-aid, for participation in contests.

8. Continue to prohibit Bureau representatives from taking part in the raising of funds for contest work.

9. Adopt a rule requiring that entry blanks show both name of company or companies by whom team members are employed and the name of the sponsor of the team where the latter is not the employer.

10. The rules should set the "deadline" for entering teams at least 30 days before the meet.

Recommendations Governing Mine Rescue Contests

1. Hold contest during daytime.

2. Change system so as to make it unnecessary to hold teams under guard for long periods of time.

ACKNOWLEDGMENTS

The author acknowledges the valuable assistance given by the chairmen and members of the various committees of the National First-Aid and Mine Rescue Contest Committee in making the national event a success. Special acknowledgment is due the chairmen of the finance, prize, and publicity committees, who gave so generously of their time and talents to provide the necessary funds and prizes and to publicize the meet.

FORMER CONTESTS

Former national or international first-aid and mine rescue contests held under the auspices of the United States Bureau of Mines are listed in table 2.

TABLE 2. - Former national or international meets[1/]

Place Held	Date	Number of first-aid teams	Number of mine rescue teams	States represented
Pittsburgh, Pa.....	October 1911	41	4	10
Terre Haute, Ind.....	September 1914		8	3
San Francisco, Calif...	September 1915	26	11	12
Pittsburgh, Pa.....	September 1919	83	24	16
Denver, Colo.....	September 1920	73	20	20
St. Louis, Mo.....	September 1921	63	16	[2/]17
Salt Lake City, Utah...	August 1923	55	21	[3/]13
Springfield, Ill.....	September 1925	55	10	15
San Francisco, Calif...	September 1926	44	14	13
Pittsburgh, Pa.....	August 1927	47	17	12
Butte, Mont.....	August 1928	45	12	11
Kansas City, Mo.....	September 1929	40	9	18
Louisville, Ky.....	September 1930	48	6	12

1/ Five of these contests were national and 14 were international in scope.
2/ Includes Canada.
3/ Includes Mexico.

MINE RESCUE CONTEST

The rescue contest held October 2 was staged on the race track immediately in front of the grandstand. Starting at 1:00 p. m. the preliminary (oral) examination was conducted in rooms under the grandstand where the teams were confined under guard until their turn to work the problem. The order in which the teams worked was determined by lot at the time of registering for the contest, with the exception of the combination team which was allowed to be first so that its members could rest before competing in the first-aid event the following day.

To simulate as closely as possible an actual case of recovery work following a mine disaster, the contest proper was started at 6:30 p. m. with the demonstration of an explosion initiated by pure coal dust. A second demonstration was conducted soon afterward in which rock dust was mixed with the coal dust to show how the propagation of flame can be prevented by the use of inert dust.

Following the initial explosion, plans for the necessary organization to conduct rescue and recovery work were made and broadcast over a public address system principally for the benefit of the spectators. Upon completion of the recovery plans, the first team entered the "mine" about 6:45 p. m., followed a few minutes later by a second and then a third team. The mine, or gallery, was laid out to permit as many as three teams to work simultaneously without any one team interfering with the work or infringing on the time of another. Despite these arrangements for hastening the work, the last team did not leave the mine until about 2:30 a. m., October 3.

The problem worked was an innovation as to the lay-out of the gallery, the type and arrangement of the problem, and the kind and arrangement of the machinery and materials used. The details are shown on a "key" map of the mine, figure 1, included in appendix B.

The critical part of the problem appeared in room 3. (See fig. 1.) A fire was burning at the face of the first crosscut causing dense smoke in the room at the entrance to, and inby and outby the entrance to, this crosscut. Also carbon monoxide was found just outby the smoke. A man had taken refuge behind a brattice curtain barricade at the face of the second crosscut, and an explosive mixture of methane was located near the face of the room.

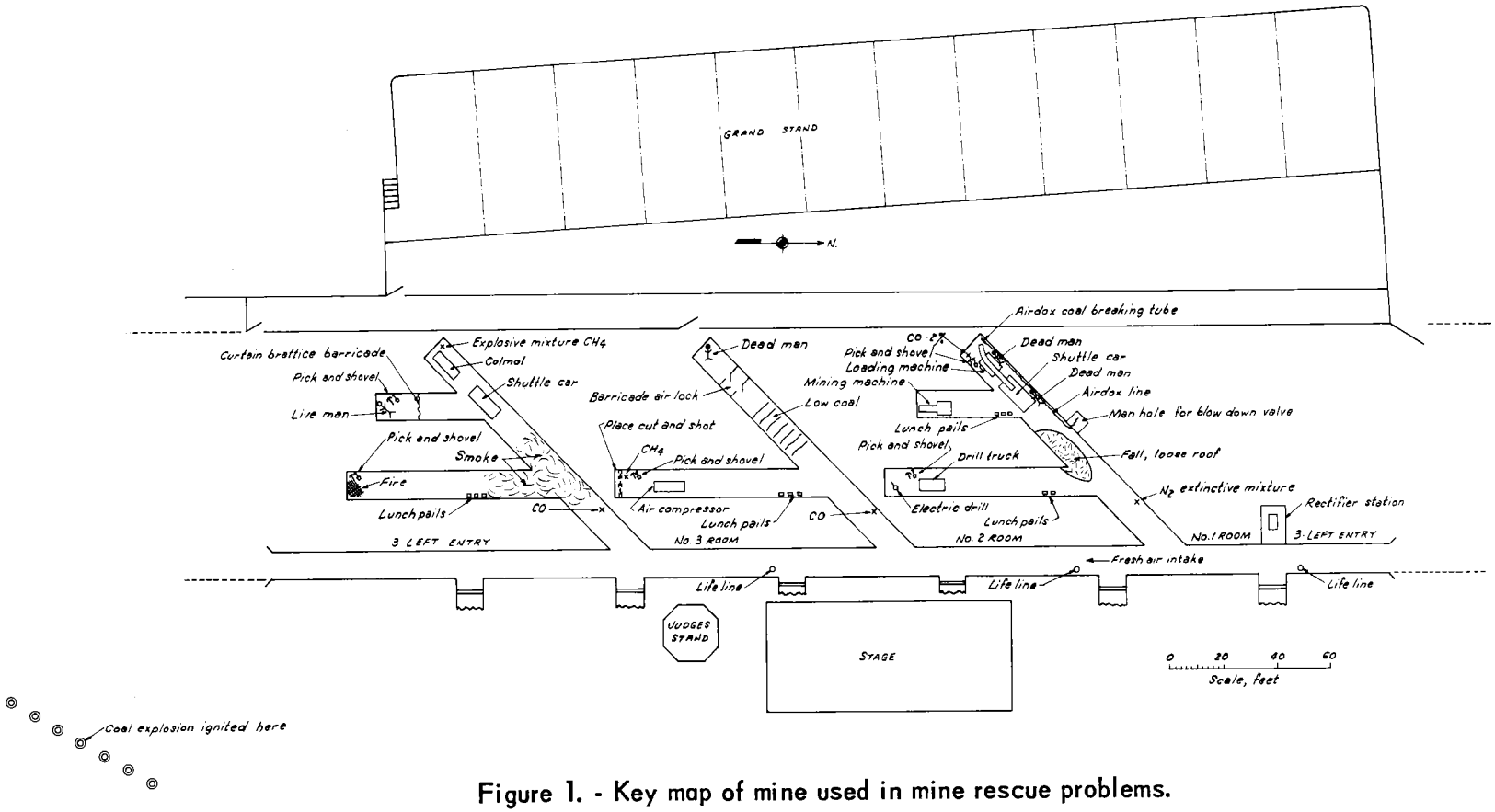

Figure 1. - Key map of mine used in mine rescue problems.

The arrangement of the machinery and equipment, the placing of "dead" and live men, the location of the various gases, miners' tools, and lunch pails, the indication of a fall of roof and low coal, and other conditions simulated actual conditions in a mine following an explosion. The problem of the teams was to proceed from the entry or fresh-air base, protected by self-contained oxygen breathing apparatus, and (a) explore all accessible openings; (b) discover and report the location and condition of all machinery, equipment, tools, and passageways; (c) discover and report all gases with respect to the kind and amount; (d) locate all falls of roof, barricades, and bodies; (e) determine the location and extent of mine fires, if any, and other data and information that might assist in ascertaining the cause of the disaster. An important function of a rescue party is to rescue any live persons found and extinguish, if possible, any fires discovered. This problem called for the rescue of a live man through heavy smoke and through an irrespirable atmosphere containing poisonous carbon monoxide produced by the fire in room 3.

The teams were judged on the accuracy of their observations covering their discoveries of the location and condition of all machinery and equipment, the extent of falls of roof, the presence of poisonous, explosive, or irrespirable gases, the location of all barricades and bodies, the location and extent of all fires, their procedure while rescuing a man imprisoned behind a barricade inby a fire, and other matters.

Upon entering the mine each team was issued a copy of the map (fig. 1) of that part of the mine where the explosion occurred. These maps were then marked by the teams to show what they found in the explosion area. All teams preparing to enter the national competition were furnished, well in advance of the meet, copies of practice problems similar to those actually used in the contest. A copy of the practice problems appears in appendix B.

The judging or rating of the teams was separated into four parts as follows:

A. Preliminary examination.

B. Checking apparatus and other procedure before entering the mine.

C. Procedure after entering the mine and beyond fresh-air base.

D. Procedure after working problem and leaving mine.

A certain predetermined number of points were discounted (1) for each failure to explore the workings properly; (2) for each failure to observe and report conditions existing in the mine; and (3) for performing any part of the work in a substandard manner during any and all of the four steps mentioned earlier. These "discounts" were tabulated on a score card, and the team having the least number of points against its record was declared the winner of the contest. The team having the next smallest number of discounts was given second place, etc.

Sample copies of the judges' discount sheets are shown in appendix C. To enable all teams to be trained alike and to assist the judges in rating the performance of the teams, a list of specific rules governing the mine rescue contest was prepared by the National Contest Committee and given each team well in advance of the contest. A copy of these rules is included in appendix D.

A list of the mine rescue teams, the companies represented, and the standing of the teams at the close of the contest is shown in table 3.

TABLE 3. - Mine rescue teams participating in contest and relative standing of teams

Place	Team No.	Company or sponsoring organization	Mine or plant	Address	Total discounts
1.....	12	United Mine Workers of America, District 16		Kitzmiller, Md.	90
2.....	4	United States Steel Co. (Coal Division), Frick Division	Robena mine	Uniontown, Pa.	104
3.....	7	Consolidation Coal Co. (Kentucky)	Clover Splint mine	Closplint, Ky.	106
4.....	13	Union Colliery Co.	New Kathleen mine	DuQuoin, Ill.	107
5 and 6	5	Eastern Coal Corp.	No. 8 mine	Stone, Ky.	109
5 and 6	11	Norfolk & Western Ry. (Fuel Department)	Howard Colliery	Chattaroy, W. Va.	109
7.....	10	Inland Steel Co.	Wheelwright mine	Wheelwright, Ky.	113
8.....	14	International Harvester Co.	Wisconsin Steel coal mine No. 2	Benham, Ky.	128
9.....	2	Consolidation Coal Co., (Kentucky)	Mine 204	Jenkins, Ky.	142
10.....	8	West Virginia Department of Mines (Consolidation Coal Co.)	No. 63 mine	Monongah, W. Va.	144
11.....	9	Miners Coal Co.	Fies mine	Madisonville, Ky.	147
12.....	1	Youghiogheny & Ohio	Dorothy mine	Martins Ferry, Ohio	150
13.....	3	United States Steel Co., Coal Division	Lynch mine	Lynch, Ky.	153
14.....	1/1-A	Hanna Coal Co.	Dun Glen No. 11 mine	Dun Glen, Ohio	161

1/ Combination team; sixth place on the field was originally drawn by this team.

First place in the rescue contest was won by team No. 12, representing the United Mine Workers of America, District 16, Kitzmiller, Md.; second place went to team No. 4 of the United States Steel Co. (Coal Division), Frick Division, Uniontown, Pa.; third place to team No. 7 of the Consolidation Coal Co., Closplint, Ky.; and fourth place to the team representing the New Kathleen mine, Union Colliery Co., DuQuoin, Ill. The first team had 90 points discount, the second 104, third 106, and fourth 107.

It is interesting to note that there was only 1 point difference between third and fourth places and 17 points between first and fourth places. The team from the New Kathleen mine was new; it was organized and trained only a few weeks before the meet, and no member had ever worn the apparatus until the team began training for the contest.

According to the rules of the contest only Bureau of Mines men were selected to act as judges. A list of the officials and judges of the mine rescue contest appears in table 4.

TABLE 4. - Officials and judges, mine rescue contest

(Bureau of Mines personnel)

Office	Name	Title	Address
Director of contest	Forbes, J. J.	Chief, Health and Safety Division	Washington, D. C.
Assistant directors	Ankeny, M. J.	Chief, Coal-Mine Inspection Branch	Do.
	Ash, S. H.	Chief, Safety Branch	Do.
	Westfield, J.	Chief, Accident Prevention and Health Division, Region VIII	Pittsburgh, Pa.
Registrars and recorders	Bird, J. H.	Chief, Accident Prevention and Health Division, Region III	Berkeley, Calif.
	Denny, E. H.	Chief, Accident Prevention and Health Division, Region IV	Denver, Colo.
	Felegy, E. W.	Mining engineer	Duluth, Minn.
	Keenan, C. M.	Coal-mine inspector	Pittsburgh, Pa.
	Kingery, D. S.	Mining engineer	Washington, D. C.
	Reese, S. T.	do.	do.
Timekeepers	Reeder, R. D.	Chief, Salt Lake City Section, Accident Prevention and Health Division, Region IV	Salt Lake City, Utah
	Witt, Paul	Petroleum engineer	Dallas, Tex.
Announcer	Walker, W. D.	Chief, Pittsburgh Branch, Accident Prevention and Health Division, Region VIII	Pittsburgh, Pa.
Chief judge	McCall, M. C.	Chief, Accident Prevention and Health Division, Region VII	Birmingham, Ala.
Assistant chief judge	Quenon, E. E.	Chief, Mount Hope Branch, Accident Prevention and Health Division, Region VIII	Mount Hope, W. Va.
Chief score-card examiner	Johnson, J. A.	Chief, Accident Prevention and Health Division, Region V	Duluth, Minn.
Team judges	Baker, F. D.	Coal-mine inspector	Fairmont, W. Va.
	Blackwood, Brooks	do.	Barbourville, Ky.
	Bradford, R. D.	Chief, McAlester Branch	McAlester, Okla.
	Burdelsky, H. R	Coal-mine inspector	Pittsburgh, Pa.
	Cagley, W. C.	do.	Johnstown, Pa.
	Callahan, J. T.	do.	St. Clairsville, Ohio
	Capps, Roy	do.	Duluth, Minn.
	Chastain, G. W.	do.	Pittsburgh, Pa.
	Christensen, E. L.	do.	Billings, Mont.
	Colbert, G. W.	do.	Norton, Va.
	Curry, T. F.	do.	Birmingham, Ala.
	Davis, M. L.	Chief, St. Clairsville Section	St. Clairsville, Ohio
	Davis, R. T.	Coal-mine inspector	Pittsburgh, Pa.
	Demkowicz, W. M.	do.	Johnstown, Pa.
	Dobis, J. J.	do.	Fairmont, W. Va.
	Dornenburg, D. D.	Mining engineer	Pittsburgh, Pa.
Team judges (Cont.)	Dovidas, C. M.	Coal-mine inspector	Vincennes, Ind.
	Duncan, M. I.	do.	Pikeville, Ky.
	Elkins, Omar	do.	Johnstown, Pa.
	Engel, H. H.	Instrument maker	Pittsburgh, Pa.
	Farren, G. C.	Safety instructor	Birmingham, Ala.
	Ferraro, J. S.	Coal-mine inspector	Mount Hope, W. Va.
	Fields, W. G.	do.	Peoria, Ill.
	Frees, G. L.	Mechanical engineer	Pittsburgh, Pa.
	Freeman, J.	Coal-mine inspector	Denver, Colo.
	Fritts, G. B.	do.	Do.
	Furin, Frank	do.	Mount Hope, W. Va.
	Gaylor, W. E.	do.	Welch, W. Va.
	Glennon, J. R.	Safety representative	Albany, N. Y.
	Griffith, F. E.	Mining engineer	Pittsburgh, Pa.
	Haley, J. F.	Coal-mine inspector	Montgomery, W. Va.
	Hallett, C. T.	do.	Denver, Colo.
	Higgins, T. C.	do.	Welch, W. Va.
	Holcomb, J. W.	do.	Pittsburgh, Pa.
	Hynal, J. B.	Safety representative	McAlester, Okla.
	Ingraham, M. L.	do.	Wilkes-Barre, Pa.
	Johnston, L. S.	Coal-mine inspector	Kittanning, Pa.
	Jones, J. E.	do.	Hazard, Ky.
	Kelley, K. K.	do.	Pittsburgh, Pa.
	Knill, L. D.	Mining engineer	Salt Lake City, Utah
	Look, A. D.	Chief, Arizona Section	Phoenix, Ariz.
	Lyons, W. L.	Coal-mine inspector	Uniontown, Pa.
	Malesky, J. S.	Mining-explosives engineer	Norton, Va.
	Matsko, John	Coal-mine inspector	Mount Hope, W. Va.
	Mark, T. R., Jr.	do.	Billings, Mont.
	Marron, E. J.	do.	St. Clairsville, Ohio
	McCreary, H. J.	Safety representative	Berkeley, Calif.
	Mechling, M. J.	Chief, St. Clairsville Section	St. Clairsville, Ohio
	Moschetti, A. C.	Coal-mine inspector	Denver, Colo.
	Marshalek, J.	do.	Elkins, W. Va.
	Munsch, A. A.	Safety representative	Bartlesville, Okla.
	Naus, L. L.	Mining engineer	Salt Lake City, Utah.
	Nelson, J. L.	Safety instructor	Birmingham, Ala.
	Null, V. D.	Coal-mine inspector	Johnstown, Pa.
	Park, W. R.	Chief, Barbourville Section	Barbourville, Ky.
	Podgorski, E. J.	Mining engineer	Denver, Colo.
	Reardon, J. C.	Coal-mine inspector	St. Clairsville, Ohio
	Rejonis, J. A.	do.	Birmingham, Ala.
	Riley, F. E.	do.	Fairmont, W. Va.
	Satterfield, M. J.	do.	Pittsburgh, Pa.
	Sinicrope, A. A.	do.	McAlester, Okla.
	Smith, G. M.	do.	Pittsburgh, Pa.
	Symons, W. J.	do.	St. Clairsville, Ohio
	Van Fleet, L. A.	Safety representative	Phoenix, Ariz.
	Williams, M. L.	Coal-mine inspector	Do.
	Wilson, H. F.	do.	Wilkes-Barre, Pa.

FIRST-AID CONTEST

The first-aid contest was held in the Coliseum near the race track. The weather was suitable for holding it outside, but at the time plans were made earlier in the year it was thought inadvisable to gamble on the weather. The contest started at 1:00 p. m., October 3, and was completed about 3:00 p. m., October 4. Ten regular problems and a tie problem were worked during the 2 days. Original plans called for working five problems the first day, starting at 1:00 p. m., and the remainder the next day, starting at 9:00 a. m. However, as it was desirable to terminate the contest as soon as possible to give team members time to get ready for the banquet and the awarding of the prizes, the teams consented and an extra problem was worked the opening day. The extra problem was used to break any ties that may have occurred during working of the regular problems. Copies of the problems worked in this contest appear in appendix E.

Although the contest was open to teams from any mineral or allied industry, only one team was from a noncoal mine - a metal mine in Alabama. No limitations were placed on the number of teams that could enter the contest. Any organization, club, union, coal, or other company connected with the mineral industry or an allied industry could enter one or more teams as long as all members were bona fide employees of a mine, mill, smelter, quarry, refinery, etc.

As in the mine rescue event, the first-aid contest was governed by a set of specific rules promulgated by the National Contest Committee. A copy of these rules is included in appendix F.

A list of the first-aid teams, the companies represented, the names of mine or plant, address, and the standing of all teams at the completion of the contest, with the percentage score of each team, are shown in table 5.

First place in the first-aid contest was won by team No. 47, representing the Philadelphia & Reading Coal & Iron Co., Maple Hill colliery, Pottsville, Pa., with a remarkably high average score of 99.68 percent. Second place went to team No. 35, Republic Steel Corp., Indianola mine, Indianola, Pa., with an average score of 99.54 percent. Team No. 14 representing the Consolidation Coal Co. (Kentucky), mine 214, Jenkins, Ky., won third place, with a score of 99.34+ percent. Team No. 53 of the Rail & River Coal Co. of Bellaire, Ohio, won fourth place, with a score of 99.34 percent.

The team finishing last in the contest had an average score of 96.56- percent (table 5), the average of all teams being 98.22 percent. These scores are higher than those of any other previous national or international contest, a definite indication that the teams were well-trained.

The high-average scores attained by the teams in this meet are probably due to the fact that many of them were among the winners of company, district, local, or State meets held throughout the several parts of the country; however, several of the teams that competed had eever before engaged in contest work. As in the mine rescue contest, practice problems were furnished well in advance of the meet to all teams preparing to enter the national first-aid competition. Copies of the practice problems appear in appendix G.

From observations during the contest and from a study of the discount sheets (score cards) it is believed that the judging was more uniform and was a marked improvement over that of any former national or international meet. As in the mine rescue contest, only Bureau of Mines representatives were permitted to act as judges. In addition to their regular and constant training in such work, all Bureau men participating in this meet were given special training in judging immediately before the contest.

A list of those officiating at the first-aid contest are shown in table 6.

TABLE 5. - First-aid teams participating in contest and relative standing of teams

Place	Team No.	Company or organization	Mine, mill, or plant	Address	General average, percent
1....	47	Philadelphia & Reading Coal & Iron Co.	Maple Hill colliery	Pottsville, Pa.	99.68
2....	35	Republic Steel Corp.	Indianola mine	Indianola, Pa.	99.54
3....	14	Consolidation Coal Co. (Kentucky)	Mine 214	Jenkins, Ky.	99.34+
4....	53	Rail & River Coal Co.		Bellaire, Ohio	99.34-
5....	2	Hanna Coal Co.	Willow Grove No. 10 mine	Neffs, Ohio	99.24
6....	10	Consolidation Coal Co. (Kentucky)	Mine 204	Jenkins, Ky.	99.22
7....	30	Hanna Coal Co.	Piney Fork No. 1 mine	Piney Fork, Ohio	99.18
8....	40	Norfolk & Western Ry. (Fuel Department)	Pond Creek colliery	South Williamson, Ky.	99.16
9....	9	Crescent Coal Co.	Brier Creek mine	Central City, Ky.	99.06
10....	39	Powhatan Mining Co.	Powhatan No. 1 mine	Powhatan Point, Ohio	99.04
11....	31	Hanna Coal Co.	Dun Glen No. 11 mine	Dun Glen, Ohio	99.02
12....	42	Pittsburgh Coal Co.	Westland Nos. 2 and 3 mines	Westland, Pa.	98.96+
13....	44	Consolidation Coal Co. (West Virginia)	Owings Mine No. 32, team No. 1	Owings, W. Va.	98.96-
14....	29	Black Star Coal Corp.	Team No. 1	Alva, Ky.	98.80
15....	11	Clear Branch Mining Co.	Clear Branch mine	Ligon, Ky.	98.70+
16....	19	Stonega Coke & Coal Co.	Glen Brook mine	Koekee, Va.	98.70-
17....	26	Consolidation Coal Co. (Kentucky)	Hendrix mine	Jenkins, Ky.	98.68
18....	7	Consolidation Coal Co. (West Virginia)	Owings No. 32 mine, team No. 2	Owings, W. Va.	98.62
19....	4	Consolidation Coal Co. (Kentucky)	Clover Splint mine	Closplint, Ky.	98.54
20....	6	Consolidation Coal Co. (Kentucky)	Clover Splint mine	Closplint, Ky.	98.48
21....	49	United States Steel Corp., Frick Division	Robena mine	Uniontown, Pa.	98.42(1)
22....	17	Norfolk & Western Ry. (Fuel Department)	Pond Creek colliery	South Williamson, Ky.	98.42(2)
23....	13	Hudson Coal Co.	Powderly colliery	Powderly, Pa.	98.36
24....	52	Christopher Coal Co.	Pursglove No. 15 mine	Morgantown, W. Va.	98.34
25....	8	Pardee & Curtin Lumber Co.	Bergoo No. 4 mine	Bergoo, W. Va.	98.32
26....	23	South Union Coal Co.	Jamison No. 11 mine	Morgantown, W. Va.	98.28
27....	18	Peabody Coal Co.	Mine No. 58	Taylorville, Ill.	98.26
28....	21	Emperor Coal Co.	Stone Division mines	Stone, Ky.	98.22
29....	32	Stonega Coal & Coke Co.	Derby mine	Derby, Va.	98.20+
30....	34	Woodward Iron Co.		Woodward, Ala.	98.20-
31....	51	Central West Virginia Coal Mining Institute (Consolidation Coal Co.)	No. 32 mine	Owings, W. Va.	98.16
32....	48	Bethlehem Fairmont Coal Co.	Scott Mine No. 2	Shinnston, W. Va.	98.12+
33....	5	Norfolk & Western Ry. (Fuel Department)	Howard Colliery	Chatteroy, W. Va.	98.12-
34....	43	Electro Metallurgical Co.	Alloy No. 2 mine	Alloy, W. Va.	98.10
35....	20	Woodward Iron Co.	Pyne mine	Woodward, Ala.	97.90+
36....	24	Consolidation Coal Co. (Kentucky)	Mine 204	Jenkins, Ky.	97.90-
37....	55	Carbon Fuel Co.	No. 9 mine	Carbon, W. Va.	97.86
38....	15	Left Fork Fuel Co., Inc.	Tim Tony mine	Quinwood, W. Va.	97.82
39....	37	Union Pacific Coal Co.	Reliance No. 7 mine	Reliance, Wyo.	97.80
40....	41	Youghiogheny & Ohio Coal Co.	Van mine	Van, W. Va.	97.78(1)
41....	56	Peabody Coal Co.	No. 43 mine	Harrisburg, Ill.	97.78(2)
42....	38	Allied Chemical & Dye Corp. Semet-Solvay Division	Harewood mine	Longacre, W. Va.	97.78(3)
43....	54	United States Steel Co.	Gary mine	Gary, W. Va.	97.68+
44....	36	Black Star Coal Corp.	Team No. 2	Alva, Ky.	97.68-
45....	12	Eastern Coal Corp.	Mine No. 7	Stone, Ky.	97.66
46....	25	Allied Chemical & Dye Corp. Semet-Solvay Division	Harewood mine	Longacre, W. Va.	97.50
47....	45	Eastern Gas & Fuel Associates	Powellton No. 6 mine	Powellton, W. Va.	97.42
48....	3	Bell & Zoller Coal & Mining Co.	Moss Hill mine	Madisonville, Ky.	97.34
49....	50	Leckie Collieries Co.	Leckie collieries	Aflex, Ky.	97.30
50....	27	Carbon Fuel Co.	No. 3 mine	Carbon, W. Va.	97.30
51....	16	United Mine Workers of America, District No. 29		Beckley, W. Va.	97.16
52....	28	Ayrshire Collieries Corp.	Sun Spot mine	Clinton, Ind.	97.02
53....	22	United States Steel Co.	Gary mine	Gary, W. Va.	96.82
54....	33	Bell & Zoller Coal & Mining Co.	Oriole mine	Madisonville, Ky.	96.56+
55....	1	American Eagle Colliery	Mine No. 70	Ameagle, W. Va.	96.56-

TABLE 6. - Officials and judges, first-aid contest

(Bureau of Mines personnel)

Office	Name	Title	Address
Director of contest	Forbes, J. J.	Chief, Health and Safety Division	Washington, D. C.
Assistant directors	Ankeny, M. J.	Chief, Coal-Mine Inspection Branch	do.
	Ash, S. H.	Chief, Safety Branch	do.
	Westfield, James	Chief, Accident Prevention and Health Division, Region VIII	Pittsburgh, Pa.
Registrars and recorders	Bird, J. H.	Chief, Accident Prevention and Health Division, Region III	Berkeley, Calif.
	Denny, E. H.	Chief, Accident Prevention and Health Division, Region IV	Denver, Colo.
	Felegy, E. W.	Mining engineer	Duluth, Minn.
	Keenan, C. M.	Coal-mine inspector	Pittsburgh, Pa.
	Kingery, D. S.	Mining engineer	Washington, D. C.
	Reese, S. T.	do.	do.
Timekeepers	Reeder, R. D.	Chief, Salt Lake City Section, Accident Prevention and Health Division, Region IV	Salt Lake City, Utah
	Witt, Paul	Petroleum engineer, Region VI	Dallas, Tex.
Score-card examiners	Griffith, F. E.	Mining engineer	Pittsburgh, Pa.
	Johnson, J. A.	Chief, Accident Prevention and Health Division, Region V	Duluth, Minn.
Problem distributors	Davis, R. T.	Coal-mine inspector	Pittsburgh, Pa.
	Park, W. R.	Chief, Barbourville Section	Barbourville, Ky.
	Satterfield, M. J.	Coal-mine inspector	Pittsburgh, Pa.
Announcer	Walker, W. D.	Chief, Pittsburgh Branch, Accident Prevention and Health Division, Region VIII	
Chief judge	Burdelsky, H. R.	Coal-mine inspector	do.
Assistant chief judge	Ankeny, M. J.	Chief, Coal-Mine Inspection Branch	Washington, D. C.
Supervising judges	Bradford, R. D.	Chief, McAlester Branch	McAlester, Okla.
	Dovidas, C. M.	Coal-mine inspector	Vincennes, Ind.
	Hynal, J. B.	Safety representative	McAlester, Okla.
	Mechling, M. J.	Chief, St. Clairsville Section	St. Clairsville, Ohio
	McCall, M. C.	Chief, Accident Prevention and Health Division, Region VII	Birmingham, Ala.
	Naus, L. L.	Mining engineer	Salt Lake City, Utah
	Null, V. D.	Coal-mine inspector	Johnstown, Pa.
	Quenon, E. E.	Chief, Mount Hope Branch	Mount Hope, W. Va.
Team judges	Baker, F. D.	Coal-mine inspector	Fairmont, W. Va.
	Basinger, H. E.	do.	Johnstown, Pa.
	Blackwood, Brooks	do.	Barbourville, Ky.
	Cagley, W. C	do.	Johnstown, Pa.
	Callahan, J. T.	do.	St. Clairsville, Ohio
	Capps, Roy	do.	Duluth, Minn.
	Chastain, G. W.	do.	Pittsburgh, Pa.
	Christensen, E. L.	do.	Billings, Mont.
	Colbert, G. W.	do.	Norton, Va.
	Curry, T. F.	do.	Birmingham, Ala.
Supervising judges (Cont.)	Davis, M. L.	Chief, St. Clairsville Section	St. Clairsville, Ohio
	Demkowicz, W. M.	Coal-mine inspector	Johnstown, Pa.
	Dobis, J.	do.	Fairmont, W. Va.
	Dornenburg, D. D.	Mining engineer	Pittsburgh, Pa.
	Duncan, M. I.	Coal-mine inspector	Pikeville, Ky.
	Elkins, Omar	do.	Somerset, Pa.
	Engel, H. H.	Instrument maker	Pittsburgh, Pa.
	Farren, G. C.	Safety instructor	Birmingham, Ala.
	Farris, J. D.	Coal-mine inspector	Barbourville, Ky.
	Ferraro, J. S.	do.	Mount Hope, W. Va.
	Fields, W. G.	do.	Peoria, Ill.
	Freeman, J.	do.	Denver, Colo.
	Fritts, G. B.	do.	Do.
	Furin, Frank	do.	Mount Hope, W. Va.
	Gaylor, W. E.	do.	Welch, W. Va.
	Glennon, J. R.	Safety instructor	Albany, N. Y.
	Guthrie, A.	Coal-mine inspector	Birmingham, Ala.
	Haley, J. F.	do.	Logan, W. Va.
	Hallett, C. T.	do.	Denver, Colo.
	Hanshen, Paul	Safety representative	Dallas, Tex.
	Higgins, T. C.	Coal-mine inspector	Welch, W. Va.
	Holcomb, J. W.	do.	Pittsburgh, Pa.
	Ingraham, M. L.	Safety instructor	Wilkes-Barre, Pa.
	Johnston, L. S.	Coal-mine inspector	Kittanning, Pa.
	Jones, J. E.	do.	Hazard, Ky.
	Kelley, K. K.	do.	Pittsburgh, Pa.
	Kirk, R. J.	do.	St. Clairsville, Ohio
	Knill, L. D.	Mining engineer	Salt Lake City, Utah
	Kolisek, Frank	Coal-mine inspector	Benton, Ill.
	Look, A. D.	Chief, Arizona Section	Phoenix, Ariz.
	Lyons, W. L.	Coal-mine inspector	Pittsburgh, Pa.
	Malesky, J. S.	Explosives engineer	Norton, Va.
	Mark, T. R., Jr.	Coal-mine inspector	Billings, Mont.
	Marron, E. J.	do.	St. Clairsville, Ohio
	Marshalek, J.	do.	Fairmont, W. Va.
	Matsko, John	do.	Mount Hope, W. Va.
	McCreary, H. J.	Safety representative	Berkeley, Calif.
	McCune, J. A.	Coal-mine inspector	Vincennes, Ind.
	Moschetti, A. C.	do.	Denver, Colo.
	Munsch, A. A.	Safety representative	Bartlesville, Okla.
	Nelson, J. L.	Safety instructor	Birmingham, Ala.
	O'Connor, J. A.	Mining engineer	Vincennes, Ind.
	Podgorski, E. J.	do.	Denver, Colo.
	Reardon, J. C.	Coal-mine inspector	St. Clairsville, Ohio
	Rejonis, J. A.	do.	Birmingham, Ala.
	Riley, F. E.	do.	Fairmont, W. Va.
	Sheridan, J. P.	do.	Vincennes, Ind.
	Sinicrope, A. A.	do.	McAlester, Okla.
	Smith, G. M.	do.	Pittsburgh, Pa.
	South, C. L.	do.	Benton, Ill.
	Van Fleet, L. A.	Safety representative	Phoenix, Ariz.
	Williams, M. L.	do.	Do.
	Wilson, H. F.	Coal-mine inspector	Wilkes-Barre, Pa.
Photographers	Hirschfield, L.	Motion-picture specialist	Pittsburgh, Pa.
	Senio, P. P.	do.	Do.
Registration clerks	Pieper, L. W.	Clerk-typist	Vincennes, Ind.
	Van Lieu, G. L. (Miss)	Clerk-administrative assistant	Do.

The first-aid contest evidently was conducted to the satisfaction of all concerned, as no complaints were heard during the meet or afterward. Previous experience in contest work indicates that the absence of complaints is a yardstick that accurately measures the satisfaction of the participants.

One item that helped the smooth functioning of the meet was the method used in distributing and collecting the problems and discount sheets. The method was similar to that employed at the national meet at Kansas City, Mo., in 1929. The system was essentially as follows: The man in charge of distributing and collecting score cards and problems was given several assistants designated as "problem distributors." After receiving the problems and cards from the chief distributor, these men delivered them in sealed envelopes to their respective supervising judges, who in turn handed them at the proper time to the team captains and team judges. Collecting the score cards was the reverse of the foregoing; that is, at the completion of each problem the team judges gave the discount sheets to their respective supervising judge, who relayed them to the distributors. The chief distributor then delivered them to the recorders for final evaluation. Undoubtedly, this scheme not only saved much time but also aided materially in the satisfactory conduct of the meet. A sample discount sheet is included in appendix H.

COMBINATION FIRST-AID AND MINE RESCUE CONTEST

Only one team participated in the combination contest. This was team No. 1-A, which represented the Dun Glen No. 11 mine of the Hanna Coal Co., Dun Glen, Ohio. Although this team came out last in the rescue contest, it was automatically the winner of the combination event as it had no opposition.

BANQUET AND AWARDING OF PRIZES

A banquet sponsored by the National Contest Committee and paid from contest funds was held at Hotel Neil House at 6:00 p. m., October 4. Approximately 820 team members, officials, judges, and guests attended. After the banquet prizes were presented to the winning teams. Because the presentation ceremonies took several hours, no other business was transacted.

Awards were made to teams in the first through seventh places in the rescue contest and to tenth place in the first-aid contest. Prizes were available for the first three places in the combination contest, but since there was only one team in this event only the first prize was given and the others were held for later use. Name of the winners, the prizes given, donors of the prizes, and names of the persons who presented the awards, separated as to the type of event (mine rescue, combination, and first-aid), are listed in tables 7, 8, and 9.

TABLE 7. - Winners of mine rescue contest

Winner		Prizes	Donor	Presented by -
First Place				
Team No. 12:	Captain Carl Schell	Congressional medallions	Congress of the United States	Dr. James Boyd, Director, Bureau of Mines.
Company:	United Mine Workers of America, District 16	Trophy	United Mine Workers of America	John Owens, Secretary-Treasurer, United Mine Workers of America.
Address:	Kitzmiller, Md.			
Total discounts:	90	Cup	Coal Age Magazine	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
		Safety lamps	Coal Operators Casualty Co.	Do.
Second Place				
Team No. 4:	Captain, Pete Yadamic	Trophy	National Coal Association	John D. Battle, Secretary, National Coal Association.
Company:	United States Steel Co. (Coal Division), Frick Division	Cuff links and tiepins	Anonymous	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Mine:	Robena mine			
Address:	Uniontown, Pa.			
Total discounts:	104			
Third Place				
Team No. 7:	Captain, Earl Poff	Trophy	Mine Safety Appliances Co.	George H. Dieke, President, Mine Safety Appliances Co.
Company:	Consolidation Coal Co. (Kentucky)	Zippo lighters	Lynch Reciprocal Coal Operators Association	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Mine:	Clover Splint mine			
Address:	Closplint, Ky.			
Total discounts:	106			
Fourth Place				
Team No. 13:	Captain, Lloyd Mathis	First-aid kits	Mine Safety Appliances Co.	Do.
Company:	Union Colliery Co.			
Mine:	New Kathleen mine			
Address:	DuQuoin, Ill.			
Total discounts:	107			
Fifth and Sixth Place - Tie				
Team No. 5:	Captain, Harold Brogan	Screw-driver set and chisel	Cincinnati Mine Machinery Co.	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Company:	Eastern Coal Corp.			
Mine:	No. 8 mine			
Address:	Stone, Ky.			
Total discounts:	109			
Sixth and Fifth Place - Tie				
Team No. 11:	Captain, Ira Gobel	Handy light	American Mine Door Co.	Do.
Company:	Norfolk & Western Ry. (Fuel Department)			
Mine:	Howard Colliery			
Address:	Chattaroy, W. Va.			
Total discounts:	109			
Seventh Place				
Team No. 10:	Captain, Olney Collins	Auto Point pencils	National Mine Service Corp.	Do.
Company:	Inland Steel Co.			
Mine:	Wheelwright mine			
Address:	Wheelwright, Ky.			
Total discounts:	113			

TABLE 8. - Winner of combination contest

Winner		Prizes	Donor	Presented by -
First Place				
Team No. 31 in first-aid contest and No. 1-A in mine rescue contest.	Captain, Lewis Jesalosky	Trophy	Mine Safety Appliances Co.	George H. Dieke, President, Mine Safety Appliances Co.
		First-aid kits	do.	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Company:	Hanna Coal Co.	Ritepoint lighters	General Reinsurance Co.	Do.
Mine:	Dun Glen No. 11 mine			
Address:	Dun Glen, Ohio			
Total discounts:				
First-aid contest:	49			
Mine rescue contest:	161			
Percentage score:				
First-aid contest:	99.02			

TABLE 9. - Winners of first-aid contest

Winner		Prizes	Donor	Presented by -
First Place				
Team No. 47:	Captain, George Moss	Congressional medallions	Congress of the United States	Dr. James Boyd, Director, Bureau of Mines.
Company:	Philadelphia & Reading Coal & Iron Co.	Trophy	National Coal Association	John D. Battle, Secretary, National Coal Association.
Mine:	Maple Hill colliery			
Address:	Pottsville, Pa.	Cup	Coal Age Magazine	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Total discounts:	16			
Percentage score:	99.68	Cuff links and tiepins	Jeffrey Manufacturing Co.	Do.
Second Place				
Team No. 35:	Captain, Vincent Stanec	Trophy	Mine Safety Appliances Co.	George H. Dieke, President, Mine Safety Appliances Co.
Company:	Republic Steel Corp.			
Mine:	Indianola mine	Ronson cigarette case lighter	Eureka Casualty Co.	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Address:	Indianola, Pa.			
Total discounts:	23			
Percentage score:	99.54			
Third Place				
Team No. 14:	Captain, Warnie Flint, Jr.	Trophy	United Mine Workers of America	John Owens, Secretary-Treasurer, United Mine Workers of America.
Company:	Consolidation Coal Co. (Kentucky)	Ronson lighters	Bituminous Casualty Corp.	J. J. Forbes, Chief, Health and Safety Division, Bureau of Mines.
Mine:	Mine 214			
Address:	Jenkins, Ky.			
Total discounts:	33			
Percentage score:	99.34+			
Fourth Place				
Team No. 53:	Captain, Joe Maygar	Parker "51" pen and pencil	American Reinsurance Co.	Do.
Company:	Rail & River Coal Co.			
Address:	Bellaire, Ohio			
Total discounts:	33			
Percentage score:	99.34-			
Fifth Place				
Team No. 2:	Captain, Melvin McLoud	Key chains	Modern Mining Publishing Co.	Do.
Company:	Hanna Coal Co.			
Mine:	Willow Grove No. 10 mine			
Address:	Neffs, Ohio			
Total discounts:	38			
Percentage score:	99.24			
Sixth Place				
Team No. 10:	Captain, Blaine Sexton	Fountain pens	Connellsville Manufacturing & Mine Supply Co.	Do.
Company:	Consolidation Coal Co. (Kentucky)			
Mine:	Mine 204			
Address:	Jenkins, Ky.			
Total discounts:	39			
Percentage score:	99.22			
Seventh Place				
Team No. 30:	Captain, Andrew Janoski	Pen and pencil sets (three-way)	Safety First Supply Co.	Do.
Company:	Hanna Coal Co.			
Mine:	Piney Fork No. 1 mine			
Address:	Piney Fork, Ohio			
Total discounts:	41			
Percentage score:	99.18			
Eighth Place				
Team No. 40:	Captain, John Zsoldos	Memo books, pen, and key chains	Pennsylvania Farmers & Thresherman's Mutual Casualty Insurance Co.	Do.
Company:	Norfolk & Western Ry. (Fuel Department)			
Mine:	Pond Creek colliery			
Address:	South Williamson, Ky.			
Total discounts:	42			
Percentage score:	99.16			
Ninth Place				
Team No. 9:	Captain, G. O. Vincent	Eversharp Jr. ball points	Aetna Casualty & Surety Co.	Do.
Company:	Crescent Coal Co.			
Mine:	Brier Creek mine			
Address:	Central City, Ky.			
Total discounts:	47			
Percentage score:	99.06			
Tenth Place				
Team No. 39:	Captain, Alfred Horvath	First-aid kits	Mine Safety Appliances Co.	Do.
Company:	Powhatan Mining Co.			
Mine:	Powhatan No. 1 mine			
Address:	Powhatan Point, Ohio			
Total discounts:	48			
Percentage score:	99.04			

State Champions

The standing of the teams in the first-aid event of the National First-Aid and Mine Rescue Contest was used as a basis for selecting State winners. The team from each State having the highest average score was awarded a State banner indicating the championship of that particular State. Winners of the State banners are shown in table 10:

TABLE 10. - State champions

State	Team No.	Company	Mine and address	Percentage score	Remarks
Alabama.....	34	Woodward Iron Co.	Woodward, Ala.	98.20-	
Illinois.....	18	Peabody Coal Co.	Mine 58, Taylorville	98.26	
Indiana.....	28	Ayrshire Collieries Corp.	Sunspot mine, Clinton	97.02	
Kentucky.....	14	Consolidation Coal Co. (Kentucky)	Mine 214, Jenkins	99.34+	First place.
Do.	10	do.	Mine 204, Jenkins	99.22	Second place.
Do.	40	Norfolk & Western Ry. (Fuel Department)	Pond Creek colliery, South Williamson	99.16	Third place.
Ohio.....	53	Rail & River Coal Co.	Bellaire, Ohio	99.34-	
Pennsylvania....	47	Philadelphia & Reading Coal & Iron Co.	Maple Hill colliery, Pottsville	99.68	
Virginia.....	32	Stonega Coke & Coal Co.	Derby mine, Derby	98.20+	
West Virginia...	44	Consolidation Coal Co. (West Virginia)	Fairmont, W. Va.	98.96-	
Wyoming.....	37	Union Pacific Coal Co.	Reliance No. 7 mine, Reliance	97.80	

In addition to indicating the first-place winner (champion) for the State of Kentucky, table 10 gives second and third place winners. The reason is that Kentucky purposely refrained from holding a State contest, as was its custom, preferring to let the national contest decide the winners in first, second, and third places in the State contest. Trophies and other prizes awarded to winners of the Kentucky State contest were presented to the teams by A. D. Sisk, chief of the Kentucky Department of Mines and Minerals, at the time of making the national awards.

COST OF FIRST-AID AND MINE RESCUE CONTEST

Funds necessary to cover the cost of the contest were raised by popular subscription from various coal associations, coal-mining companies, mining institutes, manufacturers of mining equipment, miners' organizations, and others. Collecting funds was the responsibility of the treasurer and members of the finance committee. The Bureau of Mines was not permitted to take any part in this activity. A list of the donors follows:

Contributors of Funds

Allied Chemical & Dye Corp. (Semet-Solvay), Montgomery, W. Va.
Big Sandy-Elkhorn Coal Operators Association, Pikeville, Ky.
Big Sandy-Elkhorn Coal Mining Institute, Pikeville, Ky.
Cambria Mining Co., Bellaire, Ohio
Central Pennsylvania Coal Producers Association, Altoona, Pa.
Columbia Southern Chemical Corp., Midvale, Ohio
Cumberland Valley Mining Institute, Middlesboro, Ky.
David Z. Norton Co., St. Clairsville, Ohio
Hanna Coal Co., St. Clairsville, Ohio
Harlan County Coal Operators Association, Harlan, Ky.
Harlan County Mining Institute, Harlan, Ky.
Hazard Coal Operators Association, Hazard, Ky.
Indiana Coal Operators Association, Terre Haute, Ind.
Jeffrey Manufacturing Co., Columbus, Ohio
Kentucky River Mining Institute, Hazard, Ky.
Lorain Coal & Dock Co., Bridgeport, Ohio
Lynch Coal Operators Reciprocal Association, Terre Haute, Ind.
National Coal Association, Washington, D. C.
New York Coal Co., Columbus, Ohio
Northern West Virginia Coal Operators Association, Fairmont, W. Va.
Ohio Coal Association, Cleveland, Ohio
Panhandle Mining Institute, Wheeling, W. Va.
Pond Creek-Tug River Mining Institute, Williamson, W. Va.
Powhatan Mining Co., Powhatan Point, Ohio
Rail & River Coal Co., Cleveland, Ohio
Southern Appalachian Coal Operators Association, Knoxville, Tenn.
United Mine Workers of America, Washington, D. C.
United States Steel Corp., Pittsburgh, Pa.
Warner Collieries Co., Cleveland, Ohio
West Kentucky Mining Institute, Madisonville, Ky.
West Virginia Coal Operators Association, Charleston, W. Va.
Woodward Iron Co., Woodward, Ala.
Youghiogheny & Ohio Coal Co., Cleveland, Ohio

The gallery used for the mine rescue contest was constructed by the Bureau and paid from funds furnished by the National Contest Committee and the Bureau. Some of the materials used in the gallery were donated by a commercial company, and the heavy mining machinery and equipment were loaned by several companies. A list of those who loaned or gave equipment follows:

Contributors of Equipment and Materials

American LaFrance Foamite Corp., Chicago, Ill.
Bakelite Corp., New York, N. Y.
Cardox Corp., Chicago, Ill.
Champion Stores, Pittsburgh, Pa.
Fairmont Supply Co., Washington, Pa.
John Flocker & Co., Pittsburgh, Pa.
Jeffrey Manufacturing Co., Columbus, Ohio
Joy Manufacturing Co., Pittsburgh, Pa.
Mine Safety Appliances Co., Pittsburgh, Pa.

Through the very fine efforts of the treasurer and members of his committee the contributions to the contest fund totaled $10,550.00. As the disbursements covering the cost of the meet were only $8,732.06, the balance of $1,817.94 was returned to the donors on a prorata basis. An itemized list of disbursements is shown in table 11.

TABLE 11. - Disbursements

Paid to -	Item or service	Amount
Adams, Byron S.....	Publicity prints and mats	$ 147.65
Associated Radio & Sound Service..	Public address system	285.00
Bumberger, Mary.....	Typing service	25.00
Beighley Hardware Co.....	Staples	1.32
Clements, Francis.....	Typing	25.00
Farley, H. P.....	Meeting finance committee	100.00
Farley, H. P. (office secretary)..	Typing	100.00
Griffith, F. E.....	Supplies, phone calls, and incidentals	6.66
Graphic Arts Press Co.....	Folders and programs	381.99
Hart, Spencil L.....	Newspaper drawings	35.00
Hoosier Supplies, Inc.....	Envelopes	3.30
Hotel Neil House.....	Additional expense, Columbus office, entertainment, general expenses, 6-month period, H. P. Farley	200.00
Do.	Banquet	4,097.55
I. Debraff Hardware.....	Hardware and tools	34.23
Insurance.....	On buildings, grounds, and banquet room	39.56
Jax Decorations.....	Decorating Coliseum, grandstand, and hotel	280.00
J. H. Mathews & Co.....	Badges	807.36
Joseph Woodell Co.....	Staples	4.50
John Flocker & Co.....	Manila rope	71.16
Do.	do.	70.49
Leonard's Men's Shop.....	Union suits	7.90
Ohio Fair Association.....	Rent on grounds	300.00
Do.	Electricity	121.45
Do.	Clean-up of grounds	25.00
Pennsylvania Greyhound Lines.....	Bus service to fairgrounds	466.80
Reynolds, R. E.....	Fairground employee payroll	320.76
Roll, W. H.....	State banners	200.00
Do.	State banners and engraving	66.80
Sound Studio, Inc.....	Transcripts	191.66
May Lumber Co.....	Lumber and nails	67.84
Do.	do.	88.11
Tomlinson, W. H.....	Advance (down) payment to Jax Decorations	109.55
Uniform A. A. A. Service.....	Overalls (12 pairs)	36.00
Universal Printing Co.....	Banquet tickets	14.42
Total.....		8,732.06

Certain individuals were designated by the governors of their respective States or by the heads of their organizations to represent officially their States or organizations at the national meet. These are listed in table 12.

TABLE 12. - State and organization official representatives attending contest

State or organization	Name	Title	Address
Alabama State	Gentry, H. J.	Chief mine inspector, Department of Industrial Relations	Birmingham, Ala.
Bituminous Coal Institute	Brown, H. B., Jr.		Washington, D. C.
Bethlehem Collieries Co.	Berry, J. V.	Supervisor of safety	Johnstown, Pa.
Colorado State	Allen, Thomas	Chief, Department of Mines	Denver, Colo.
Federal Civil Defense Administration	Caldwell, Millard	Administrator	Washington, D. C.
Globe-Miami District Mine Rescue and First-Aid Association	Woodburn, Orr	Director	Globe, Ariz.
Illinois State	Johnson, W. J.	Assistant director, Department of Mines and Minerals	Springfield, Ill.
Indiana State	Butts, William	Director, Bureau of Mines and Mining	Terre Haute, Ind.
Kentucky State	Sisk, A. D.	Chief, Department of Mines and Minerals	Lexington, Ky.
Maryland State	Rutledge, Dr. J. J.	Bureau of Mines	Annapolis, Md.
National Coal Association	Battle, John D.	Executive vice president	Washington, D. C.
	Maize, E. R.	Safety director	Do.
New York State	Kollak, W. K.	Supervisor, Bureau of Mines	Albany, N. Y.
Ohio State	Williams, Stephen	Chief, mine inspector, Division of Mines	Columbus, Ohio.
Ohio Coal Association	Sampson, Ford	Commissioner	Bridgeport, Ohio
Pennsylvania State	Maize, Richard	Secretary, Department of Mines	Harrisburg, Pa.
United Mine Workers of America	Ferguson, Charles	Assistant safety director	Washington, D. C.
	Pacifico, Adolph	President, district 6	Bellaire, Ohio
Virginia State	Kelly, Creed	Chief inspector, division of mines, Department of Labor and Industry	Big Stone Gap, Va.
West Virginia State	Alexander, A. J.	Chief, Department of Mines	Charleston, W. Va.

Other individuals were appointed to act in the capacity of field supervisor to assist the Director of the contest. A list of these appointees is given in table 13.

TABLE 13. - State and organization representatives acting as field supervisors and assistants to Director of contest

State or organization	Name	Title	Address
Illinois State.....	Williams, W. J.	Mine Rescue Station, Superintendent, Department of Mines and Minerals	Springfield, Ill.
Indiana State.....	McCullough, W. J.	Superintendent, Rescue Station	Terre Haute, Ind.
Kentucky State.....	Cox, Otis	State mine inspector, Department of Mines and Minerals	Pineville, Ky.
	Elkins, Pearl	do.	Lexington, Ky.
	Layne, Elmer	do.	Pikeville, Ky.
	Phalan, J. H.	do.	Madisonville, Ky.
	Webb, Arlie	do.	Hazard, Ky.
National Coal Association	Maize, E. R.	Safety director	Washington, D. C.
Ohio State.....	Chadwick, Joseph	State mine inspector, Ohio Division of Mines	Shadyside, Ohio
	Gaskins, W. F.	do.	Athens, Ohio
	Moore, P. W.	do.	Cambridge, Ohio
	Woodcock, Albert	do.	Amsterdam, Ohio
Pennsylvania State.....	Black, Leslie	Instructor, Pennsylvania Department of Mines	Waltersburg, Pa.

As stated previously in this report, the meet was arranged and conducted by a committee selected expressly for the purpose. Table 14 lists the full committee.

TABLE 14. - Members of the National First-Aid and Mine Rescue Contest Committee

Office	Name	Title and company or organization	Address
Director	Forbes, J. J.	Chief, Health and Safety Division, Bureau of Mines	Washington, D. C.
Assistant directors	Ankeny, M. J.	Chief, Coal-Mine Inspection Branch, Bureau of Mines	Do.
	Ash, S. H.	Chief, Safety Branch, Bureau of Mines	Do.
	Westfield, James	Chief, Accident Prevention and Health Division, Region VIII, Bureau of Mines	Pittsburgh, Pa.
Advisors to director	Allen, Thomas	Chief, Department of Mines	Denver, Colo.
	Alexander, Arch	Chief, West Virginia Department of Mines	Charleston, W. Va.
	Butts, William	Chief, Indiana Bureau of Mines and Mining	Terre Haute, Ind.
	Eadie, Walter	Director, Illinois Department of Mines and Minerals	Springfield, Ill
	Kelly, Creed	Chief mine inspector, Division of Mines, Department of Labor and Industry	Big Stone Gap, Va.
	Maize, Richard	Secretary, Pennsylvania Department of Mines	Harrisburg, Pa.
	Sisk, A. D	Chief, Department of Mines and Minerals	Lexington, Ky.
	Williams, Stephen	Chief mine inspector, Division of Mines	Columbus, Ohio
Secretary	Tomlinson, W. H.	Chief, Vincennes Branch, Region VIII, Bureau of Mines	Vincennes, Ind.
Treasurer	Farley, H. P. (Pete)	West Virginia Department of Mines	Charleston, W. Va.
Arrangements Committee	Warncke, Russell G. (chairman)	Bureau of Mines	Washington, D. C.
	Ferguson, Charles	Assistant director, Safety Division, United Mine Workers of America	Do.
	Maize, Earl	Safety director, National Coal Association	Do.
	Pacifico, Adolph	President, District 6, United Mine Workers of America	Bellaire, Ohio
	Sampson, Ford	Commissioner, Ohio Coal Association	Bridgeport, Ohio
	Williams, Stephen	Chief mine inspector, Division of Mines	Columbus, Ohio
Grounds committee	Westfield, James (chairman)	Chief, Accident Prevention and Health Division, Region VIII, Bureau of Mines	Pittsburgh, Pa.
	Burdelsky, Harry	Coal-mine inspector, Bureau of Mines	Do.
	Dickson, Robert	Secretary, Kentucky River Mining Institute	Hazard, Ky.
Finance Committee	Farley, H. P. (Pete) (chairman)	West Virginia Department of Mines	Charleston, W. Va.
	Allen, Thomas	Chief, Department of Mines	Denver, Colo.
	Bailey, Fred J.	Director of safety, mining Division, Cardox Corp.	Chicago, Ill.
Finance Committee (Cont.)	Cartwright, Harvey	Commissioner, Indiana Coal Operators Association	Terre Haute, Ind.
	Deringer, B. W.	Operators commissioner, Central Pennsylvania Coal Operators Association	Altoona, Pa.
	Ferguson, Charles	Assistant director, Safety Division, United Mine Workers of America	Washington, D. C.
	Housman, B. B.	Secretary, Pocahontas Operators Association	Bluefield, W. Va.
	Kaczinski, Charles	Safety director, District 1, United Mine Workers of America	Scranton, Pa.
	Maize, Earl	Safety director, National Coal Association	Washington, D. C.
	Malloy, John M.	Chief mine inspector, State of Oklahoma	Oklahoma City, Okla.
	Mark, James	President, District 2, United Mine Workers of America	Ebensburg, Pa.
	Mooney, Stanley	Safety director, Woodward Iron Co.	Woodward, Ala.
	Norcross, Robert	Secretary, West Virginia Coal Association	Charleston, W. Va.
	Sampson, Ford	Commissioner, Ohio Coal Association	Bridgeport, Ohio
	Starling, Edd	Secretary, Harlan County Coal Operators Association	Harlan, Ky.
	Sutter, Harry A.	Executive vice president, Western Pennsylvania Coal Operators Association	Pittsburgh, Pa.
	Urbaniak, Cecil J.	President, District 31, United Mine Workers of America	Fairmont, W. Va.
	Williams, Stephen	Chief, Division of Mines	Columbus, Ohio
Prize Committee	Roll, W. H. (chairman)	Executive assistant, Kentucky Department of Mines and Minerals	Lexington, Ky.
	Batman, Howard T.	General Manager, Lynch Coal Operators Reciprocal Association	Terre Haute, Ind.
	Bierer, Joseph	Administrative assistant, West Virginia Department of Mines	Charleston, W. Va.
	Currie, Robert D.	Engineer, General Reinsurance Corp.	Truckville, Pa.
	Donahue, C. M.	Representative, Mine Safety Appliances Co.	Pittsburgh, Pa.
	Davis, C. F.	Safety director, United Mine Workers of America	Washington, D. C.
	Grafton, Harold J.	Eureka Casualty Co.	Philadelphia, Pa.
	Herbert, C. F.	Superintendent, Safety Engineering Department, Bituminous Casualty Corp.	Rock Island, Ill.
	Legg, Charles	Mine rescue instructor, Pennsylvania Department of Mines	Ebensburg, Pa.

TABLE 14. - Members of the National First-Aid and Mine Rescue Contest Committee (Cont.)

Office	Name	Title and company or organization	Address
Rules Committee	Burdelsky, Harry (chairman)	Coal-mine inspector, Bureau of Mines	Pittsburgh, Pa.
	Berry, J. V.	Supervisor of safety, Bethlehem Collieries Corp.	Johnstown, Pa.
	Hock, Clinton H.	Mine rescue instructor, Pennsylvania Department of Mines	Uniontown, Pa.
	Jones, C. W.	First-aid instructor, Pennsylvania Department of Mines	Girardville, Pa.
	Mosgrove, Jed	Secretary, Big Sandy-Elkhorn Coal Mining Institute	Pikeville, Ky.
	Schuster, W. J.	Safety director, Hanna Coal Co.	Adena, Ohio
Publicity Committee	Brown, Henry B., Jr. (chairman)	Bituminous Coal Institute	Washington, D. C.
	Ardigo, Joseph J.	Secretary, Operators Association of Williamson Field	Williamson, W. Va.
	Bayless, I. N.	President, Union Pacific Coal Co.	Omaha, Neb.
	Boyle, W. A.	President, District 27, United Mine Workers of America	Billings, Mont.
	Bradford, R. D.	Chief, Coal-Mine Inspection Branch, Region VI, Bureau of Mines	McAlester, Okla.
	Brennan, Martin F.	President, District 7, United Mine Workers of America	Hazelton, Pa.
	Butts, William	Director, Bureau of Mines and Mining	Terre Haute, Ind.
	Caddy, Samuel	President, District 30, United Mine Workers of America	Lexington, Ky.
	Clark, Ralph W.	Secretary, Coal Producers Association of Washington	Seattle, Wash.
	Christiansen, A. J.	Secretary, Illinois Coal Strippers Association	Chicago, Ill.
	Condra, Allen	President, District 28, United Mine Workers of America	Norton, Va.
	Davis, C. W.	Secretary, Southern Appalachian Coal Operators Association	Knoxville, Tenn.
	Eadie, Walter	Director, Illinois Department of Mines and Minerals	Springfield, Ill.
	Esser, George H	President, Virginia Coal Operators Association	Norton, Va.
	Higgins, Aubin	Secretary, Western Kentucky Mining Institute	Earlington, Ky.
	Higgins, S. C.	Secretary, New River Coal Operators Association	Mount Hope, W. Va.
	Homan, Harry S	Executive secretary, Big Sandy-Elkhorn Coal Operators Association	Pikeville, Ky.
	Inman, Ira D.	Secretary and safety director, Cumberland Valley Mining Institute	Middlesboro, Ky.
	Kennedy, Harry G.	Executive secretary, Kanawha Coal Operators Association	Charleston, W. Va.
	Kershetsky, Joseph	President, District 9, United Mine Workers of America	Shamokin, Pa.
	Letton, Raymond L.	Commissioner, Southwestern Interstate Coal Operators Association	Pittsburg, Kans.
	Maddox, Taylor	Safety director, District 19, United Mine Workers of America	Middlesboro, Ky.
	Malin, Jerry	Chief, Office of Mineral Information, Region VI, Bureau of Mines	Amarillo, Tex.
	Markel, M. L.	Secretary, Somerset County Coal Operators Association	Somerset, Pa.
	McKinney, Roscoe	President, District 11, United Mine Workers of America	Terre Haute, Ind.
	Mitch, William	President, District 20, United Mine Workers of America	Birmingham, Ala.
	Morgan, Ed J.	President, District 23, United Mine Workers of America	Madisonville, Ky.
	Nicholls, Sam	President, District 10, United Mine Workers of America	Renton, Wash.
	Nicolai, Eugene R.	Chief, Office of Mineral Information, Region VIII, Bureau of Mines	Pittsburgh, Pa.
	Olsen, Emery C.	Safety engineer, Geneva Steel Co.	Dragerton, Utah
	O'Rear, Neilsen B.	Assistant chief, Office of Minerals Reports, Bureau of Mines	Washington, D. C.
	Owen, Cecil	Assistant editor, United Mine Workers Journal	Do.
	Stachura, John A.	General superintendent, Enoco Collieries, Inc.	Vincennes, Ind.
	Stewart, Homer C.	Chief, Office of Mineral Information, Region IV, Bureau of Mines	Denver, Colo.
	Stusnick, John J.	Assistant safety director, District 1, United Mine Workers of America	Scranton, Pa.
	Van Horn, Ezra	Executive vice president, Ohio Coal Association	Cleveland, Ohio
	White, Hugh	President, District 12, United Mine Workers of America	Springfield, Ill.
	Willing, Robert P.	Chief, Office of Mineral Information, Region V, Bureau of Mines	Minneapolis, Minn.
	Younger, Stephen	Safety director, Norfolk & Western Ry. (Fuel Department)	Williamson, W. Va.
Program Committee	Fene, W. J.	Assistant chief, Health and Safety Division, Bureau of Mines	Washington, D. C.
	Tomlinson, W. H.	Chief, Vincennes Branch, Accident Prevention and Health Division, Region VIII, Bureau of Mines	Vincennes, Ind.

APPENDIX A: GENERAL RULES FOR CONDUCTING THE NATIONAL FIRST-AID AND MINE RESCUE CONTEST, 1951

1. The first-aid and mine rescue contests will be held in the Coliseum, fairgrounds, Columbus, Ohio, October 2, 3, and 4, 1951.

2. There will be no limitations as to the number of teams admitted to the contests from any one State, district, company, or organization.

3. The members of all teams must be bona fide employees of the mine or mines; smelter or smelters; mill or mills; petroleum refinery or other branch of the petroleum industry; quarry or quarries; or plant of an allied industry, represented by the team, and may be underground or surface workers in or about the mine, smelter, mill, metallurgical plant, petroleum operation, quarry, or allied industry.

4. Any organization, union, club, or local benefit society may enter a team. The members of such team shall be actual members of the said organization and shall be employed in or about a mine, smelter, mill, petroleum plant, quarry, or allied industry plant in the local district covered by the membership of the organization.

5. No physician, trained nurse, safety engineer, safety inspector, former Bureau of Mines safety instructor, State safety instructor, or a full-time paid first-aid instructor regularly employed by a company shall be a member of a team.

6. Entry shall be submitted in writing or by wire to W. H. Tomlinson, secretary, National First-Aid and Mine Rescue Contest, Bureau of Mines, 201 Post Office Building, Vincennes, Ind., on or before September 17, 1951. On or before this date the name of the captain of each contesting team must be submitted. However, if necessary, substitutes will be allowed after September 17 by proper statement in writing. No entries will be received after September 17, 1951, except that where participation in the national contest is determined through elimination processes in district, State, or other contests held on or after September 17, 1951, teams from these contests will be permitted to enter the national meet after September 17, 1951. No notice of entry of any teams will be accepted after 12 o'clock noon, Monday, October 1, 1951. Entry blanks may be obtained by application to the nearest Bureau of Mines branch or section office.

7. The same team may enter either the mine rescue or first-aid contests, or both.

8. The same team members who participate in the first-aid contest, exclusive of the patient, must constitute the mine rescue team in order to qualify for combination prizes.

9. Each team entering the mine rescue contest and each team entering the first-aid contest will be given a number to determine its order of performance and field location. Such numbers will be assigned by lot and drawn by the teams as they register.

10. Registration of first-aid and mine rescue teams, judges, and contest officials will be at Hotel Neil House, Columbus, Ohio, between 1:00 p. m. and 10:00 p. m., October 1, 1951. Registration will be continued at the Coliseum between 8:00 a. m. and 8:45 a. m., October 2, 1951.

11. Evidence must be presented to the contest officials that each member of a mine rescue team has had a thorough physical examination by a qualified physician not more than 30 days before the contest. At the time of registering, the captain of each team will be required to turn over to the registrars a Bureau of Mines "Physician's Examination Form" signed by the examining physician, showing that each member is

physically sound and capable of performing strenous work under oxygen. In addition, a physical-fitness examination by a Bureau of Mines representative will be given each member immediately before the preliminary examination of his team. Physician's Examination Form (Bureau of Mines Form 6-141) may be obtained from the nearest Bureau of Mines branch or section office.

12. Any team that is not on the field and ready when the first event for which it is entered is announced will be disqualified from the contest.

13. Subject to possible later revision, the preliminary examination and testing of rescue crews and apparatus will begin at the Coliseum, Columbus, Ohio, at 8:30 a. m., October 2, 1951. The mine rescue contest proper will be held at approximately the same time. After completing the preliminary examination each team will be conducted to the contest gallery, where it will work the mine rescue problem.

14. Subject to possible later revision, the first-aid contest will begin at 1:00 p. m., October 3, and at 9:00 a. m., October 4, 1951, and continue until the completion of the contest.

15. The use of any type of mechanical resuscitating device will not be permitted in the first-aid or mine rescue events. This rule does not prohibit the use of any device approved by the Bureau of Mines which will afford the proper protection for a subject (patient) under the conditions specified in the problem.

16. After the completion of the first-aid and mine rescue contests, teams with their equipment must remain on the field until announcements are made regarding ties, if any.

17. Any team that has left the field or whose equipment is not available when called upon to compete in ties will be disqualified.

18. Possible ties in contests will be decided by special events; if time does not permit, they may by mutual agreement be decided by lot.

19. Information regarding cups and prizes will be found in the program of the meet, which will be given to the teams when they register.

20. The first-aid and mine rescue teams winning prizes will be officially announced during the evening of October 4 by a person or persons designated for this purpose.

21. After the awarding of prizes, the captain of each team will be furnished with his team rating.

22. All rules relating to the contests will be rigidly enforced.

APPENDIX B: MINE RESCUE PRACTICE PROBLEMS

(See key map of mine, fig. 1.)

Problem No. 1

Reading time, 3 minutes. Working time, 20 minutes.

After a section of a mine has been explored and recovery work completed following a local explosion, the fire boss on his early morning round discovers smoke at the neck of room 1 (inby). Crew will enter, observe, and record on map conditions found and take whatever steps may be necessary to extinguish the fire.

Outline for Working Problem in Mine

1. Each team enters No. 1 entry.
2. Proceeds over incline and down ladder, keeping proper interval and marking course of travel. Failure throughout problem.
3. Tests for CO gas and records results.
4. Locates and records blown-out stopping, roof fall, dangerous roof, and water at face of No. 1 entry.
5. Passes through crosscut to face of No. 2 entry.
6. Marks face of No. 2 entry; locates and records empty car blown off track near face.
7. Locates and records fire in room 1.
8. The fire in room 1 is beyond control, and the room must be sealed. If team does not have brattice cloth, it may obtain material from barricade in room 2.
9. Team should erect temporary seal in mouth of room 1.
10. Proceeds through smoke room to outside; not necessary to explore room 2.
11. Life line should be used during working of entire problem.
12. Team should signal properly to fresh-air base.
13. Captain should examine gages, apparatus, etc.

Most Common Mistakes

1. Failure to use life line.
2. Failure to signal fresh-air base.
3. Failure to mark course of travel.
4. Failure to mark faces.
5. Failure to maintain proper interval.
6. Failure of captain to examine gages, apparatus, etc., of team members.
7. Unnecessary talking.
8. Failure to locate and record unusual conditions in mine.
9. Failure to test at gas-testing stations.

Problem No. 2

Reading time, 3 minutes. Working time, 30 minutes.

A foreman investigates the delay in checking out of two shot firers, who should have completed shooting before the night shift enters the mine, and finds indication of an explosion. Proper report is given and recovery work starts.

Outline for Working Problem in Mine

1. Each team enters mine on main intake, carrying life line.
2. Tests for CO gas and records results.
3. Proceeds over incline and down ladder to face of main intake, keeping proper interval and marking course of travel. Failure throughout problem.
4. Tests for CO_2 gas and records results.
5. Observes and records car at face of main intake and timbers against rib; marks face.
6. Passes through crosscut to face of main return.
7. Observes and records position and location of wrecked car and material shot down.
8. Marks face of main return.
9. Proceeds into room 1; records blown-down props, fall of roof, and blown-out shot.
10. Marks face of room.
11. Records position and location of dead man in room 1.

12. Proceeds out main return; records roof fall opposite crosscut.
13. Tests for CH_4 gas and records results.
14. Explores and marks face of crosscut.
15. Records fall of rock on main return.
16. Proceeds into smoke room and marks face.
17. Proceeds out main return; records location and position of wrecked handcar containing two cases of pellet powder.
18. Explores and marks face of crosscut.
19. Observes and records barricade at mouth of room 2.
20. Proceeds into room 2;-finds unconscious man, protects with oxygen breathing apparatus, places on stretcher, and carries to outside.
21. Marks face of room 2.
22. Proceeds out main return to outside, marking course of travel.
23. Team must use oxygen breathing apparatus on unconscious miner.
24. After unconscious miner has been protected, he should be placed on stretcher and removed to outside. It will not be necessary to administer artificial respiration.
25. Life line should be used during working of entire problem.
26. Flame safety lamp must be used in testing for CH_4 at face of main return and CO_2 on main return.
27. Apparatus gages should be tested twice on main intake and once on main return entry.

Most Common Mistakes

1. Failure to use life line.
2. Failure to signal fresh-air base.
3. Failure to mark course of travel.
4. Failure to mark faces.
5. Failure to maintain proper interval.
6. Failure of captain to examine gages, apparatus, etc., of team members.
7. Unnecessary talking.
8. Failure to locate and record unusual conditions in mine.
9. Failure to test for irrespirable gases.

Problem No. 3

Reading time, 3 minutes. Working time, 25 minutes.

A door has been left open by a night-shift driver on his last trip, thereby allowing explosive gas to accumulate. A nonpermissible mining machine in operation ignites the gas. It is known that one man in addition to the machinemen is working in this section.

Crew will explore and indicate on map all unusual conditions, locate and ascertain condition of men in the section, and take such action as may be necessary.

Outline for Working Problem in Mine

1. Each team enters No. 1 entry.
2. Tests for CO gas and records results.
3. Proceeds over incline and down ladder to face of No. 1 entry, keeping proper interval and marking course of travel. Failure throughout problem.
4. Locates and records blown-out stopping, roof fall, dangerous roof, and water at face of No. 1 entry.
5. Marks face of No. 1 entry.
6. Passes through crosscut to face of No. 2 entry.

7. Marks face of No. 2 entry; locates and records empty car blown off track near face.
8. Proceeds into room 1.
9. Tests for methane and records results.
10. Locates and records position of two dead men near face.
11. Locates and records mining machine, machineman's shoe, dinner pails, and posts blown against rib in room 1.
12. Proceeds out of room 1 and into room 2.
13. Locates and records positions of barricade, fire boss, and flame safety lamp.
14. Atmosphere in entire mine contains enough oxygen to sustain life.
15. Team may use either oxygen breathing apparatus or All-Service gas masks to remove fire boss from mine.
16. Proceeds with live man, fully protected, from room 2 to No. 2 entry through smoke room to outside.
17. Life line should be used during working of entire problem.
18. Team should signal properly to fresh-air base.
19. Excessive talking.
20. Failure of captain to examine gages, apparatus, etc.

Most Common Mistakes

1. Failure to use life line.
2. Failure to signal fresh-air base.
3. Failure to mark course of travel.
4. Failure to mark faces.
5. Failure to maintain proper interval.
6. Failure of captain to examine gages, apparatus, etc., of team members.
7. Unnecessary talking.
8. Failure to locate and record unusual conditions in mine.
9. Failure to test at gas testing stations.

Problem No. 4

Reading time, 3 minutes. Working time, 25 minutes.

The check "in-and-out" system in use at this mine shows that one miner is unaccounted for at the end of the working shift. Crew will enter and bring miner to surface.

Outline for Working Problem in Mine

1. Each team enters main intake.
2. Records roof fall and sudden outburst of gas from strata.
3. Tests for CO_2 gas and records results. Flame safety lamp is extinguished here, and if relighted team should be discounted.
4. Proceeds over incline and down ladder.
5. Not required to go into smoke room; proceeds to and explores room 1.
6. Locates unconscious miner in crosscut outby chamber 1. Team should protect unconscious miner with oxygen breathing apparatus, place him on stretcher, and proceed to outside.
7. Records cave at mouth of room 2.

Most Common Mistakes

1. Failure to use life line and properly signal fresh-air base.
2. Failure to properly mark course of travel and faces.
3. Failure to maintain proper interval.
4. Failure of captain to examine gages, apparatus, etc.
5. Failure to locate and record unusual conditions.
6. Failure to protect unconscious miner properly. Gas mask not enough protection in this problem, because the atmosphere is depleted of oxygen and flame safety lamp will not burn from gas-testing station inby.

Problem No. 5

Reading time, 3 minutes. Working time, 30 minutes.

A fire has been extinguished near the entrance of the section of the mine; three men are known to have been working in this section beyond (inby) the fire. Crews will explore and note all unusual conditions found, ascertain the condition of men found, and take such action as may be necessary.

Note: It is assumed that no methane or other gases are present in explosive amounts in any part of the mine.

Outline for Working Problem in Mine

1. Each team enters mine on main intake.
2. Tests for CO gas and records results.
3. Observes and records location of extinguished fire.
4. Proceeds over incline and down ladder to face of main intake, keeping proper interval and marking course of travel.
5. Tests for CO_2 gas and records results.
6. Marks face of main intake.
7. Passes through crosscut to face of main return.
8. Records position and location of dead mule, powder car, and dead man.
9. Marks face of main return.
10. Proceeds into smoke room, goes to face, and marks.
11. Proceeds out main return; records roof fall and fallen trolley wire.
12. Proceeds into room 1; records roof fall and position and location of dead man. Teams should not be discounted for failure to record freshly shot face or mine car.
13. Proceeds out main return and into room 2; records bad roof and location and position of unconscious miner and partly built barricade. Teams should not be discounted for failure to record drilling machine and the three holes in face of chamber.
14. Atmosphere in room 2 contains enough oxygen to sustain life.
15. Teams may use either oxygen breathing apparatus or All-Service gas mask on unconscious miner.
16. After unconscious miner has been protected, he should be placed on stretcher and removed to outside. It will be necessary to administer artificial respiration.
17. Life line should be used during working of entire problem.
18. Flame safety lamp shall be used for testing for oxygen deficiency at face of main intake.

Most Common Mistakes

1. Failure to use life line.
2. Failure to signal fresh-air base.
3. Failure to mark course of travel.

4. Failure to mark faces.
5. Failure to maintain proper interval.
6. Failure of captain to examine gages, apparatus, etc., of team members.
7. Unnecessary talking.
8. Failure to locate and record unusual conditions in mine.
9. Failure to test for irrespirable gases.

Problem No. 6

Reading time, 3 minutes. Working time, 20 minutes.

Upon entering the mine, the night shift encounters smoke on the main haulageway. An apparatus crew is organized to investigate the source of the smoke and to find two men known to be in the mine.

Outline for Working Problem in Mine

1. Each team enters mine on main intake.
2. Proceeds over incline and down ladder to face of main intake, keeping proper interval and marking course of travel.
3. Tests for CO gas and records results.
4. Marks face of main intake.
5. Locates and records empty car at face of main intake.
6. Proceeds through last crosscut to main return, observing and recording smoldering timbers.
7. Marks face of main return.
8. Observes and records cave in mouth of room 1.
9. Tests for CH_4 gas and records results.
10. Explores crosscut; locates and records position of dead man.
11. Explores and marks face of crosscut.
12. Team not required to enter smoke room.
13. Explores crosscut; finds live man, protects with either gas mask or oxygen breathing apparatus, and places on stretcher. Not necessary to administer artificial respiration.
14. Proceeds to outside. Not necessary for team to explore remaining crosscut or room 2.
15. Life line should be used during working of entire problem.
16. Flame safety lamp must be used for testing for CH_4.
17. Apparatus gages should be tested twice on main intake and once on main return entry.

Most Common Mistakes

1. Failure to use life line and properly signal fresh-air base.
2. Failure to mark properly course of travel and faces.
3. Failure to maintain proper interval.
4. Failure of captain to examine gages, apparatus, etc.
5. Failure to locate and record unusual conditions.
6. Failure to protect unconscious miner properly.

APPENDIX C: JUDGES' DISCOUNT SHEETS, MINE RESCUE CONTEST

A. Preliminary Examination

Questions will be asked each member of the crew. These questions will be selected and assembled by a committee before the contest begins. All questions will be taken from the 1941 edition of the Bureau of Mines Self-Contained Oxygen Breathing Apparatus Handbook for Miners.

In the oral examination each team member can score 20 if all questions are answered correctly.

The following tabulation shows the possible total score that can be made by the teams in the oral examination:

		Discount
Team captain	20	_____
Team member No. 1	20	_____
Team member No. 2	20	_____
Team member No. 3	20	_____
Team member No. 4	20	_____
Total	100	

Team No._____

B. Checking Apparatus and Other Procedure Before Entering Mine

Note: Teams will be charged additional discounts for repetition of the same mistake in the same problem. For example: Oxygen supply of each team member less than 115 atmospheres, 2 points; each loose joint or connection, 2 points, etc.

		Discount	
(a)	Apparatus improperly assembled or improperly adjusted to wearer, each man	2	_____
(b)	Failure to evacuate apparatus completely of air before turning on oxygen, each man	2	_____
(c)	Apparatus part or parts worn or deteriorated so as to be dangerous to wearer, each man	2	_____
(d)	Loose joint or connection, each	2	_____
(e)	Gasket missing, each	2	_____
(f)	Oxygen supply of team member less than 115 atmospheres, each man	2	_____
(g)	Insufficient or too high rate of oxygen feed, evidenced by flat or highly inflated breathing bag, etc., each apparatus	2	_____
(h)	Failure of captain to examine gages, apparatus, etc., of team members and to have a team member to examine the captain's gage, apparatus, etc., before entering the mine	2	_____
(i)	Failure to test extra apparatus or other protective device to be used when a live man is to be rescued. (The usual test should be made of the extra apparatus; however, the tester should not put extra mouthpiece in his mouth while testing.)	2	_____
(j)	Failure of team to arrange standard life-line signals with fresh-air base	2	_____
(k)	Failure of team to be under oxygen and ready to enter the mine at the end of the 5-minute preparation period, deduct 2 points for each minute or fraction thereof over the 5-minute period. Apparatus to be put on and adjusted to wearer in the presence of the judges		_____

		Discount
(l)	Team member talking to unauthorized person without permission of the supervisor or judge, each infraction	2 _____
(m)	Failure of team to "count off" before entering the mine. (Hand or audible counting off acceptable.)	2 _____
	Total discounts	_____

_____ Judge _____ Judge _____ Judge

Team No._____

C. After entering the Mine and Beyond Fresh-Air Base

Note: Teams will be charged additional discounts for repetition of the same mistake in the same problem. For example: Unnecessary use of bypass valve, discount 2 points for each infraction; excessive use of relief valve, discount 2 points for each team member committing the infraction, etc.

		Discount
(a)	Failure to take gas-detecting devices and other necessary equipment to complete the problem, each omission	2 _____
(b)	Failure to procure mine map	2 _____
(c)	Failure to use life line	2 _____
(d)	Failure to signal properly to fresh-air base by use of the standard signals on the life line, each infraction	1 _____
(e)	Failure to mark properly course of travel. (Arrows to point toward place of entrance.)	2 _____
(f)	Failure to mark properly faces of rooms, entries, crosscuts, etc., for each omission	2 _____
(g)	Failure to maintain proper interval while traveling	2 _____
(h)	Captain or other team member doing anything to endanger safety of the crew, each infraction	2 _____
(i)	Failure of captain to direct or command crew properly	1 _____
(j)	Failure of captain to test or improper testing of the roof. (Roof tests should be made only at regular stops, carefully, and by the sound-and-vibration method.)	2 _____
(k)	Failure of captain to examine gages, apparatus, etc., of team members and to have team member examine the captain's gage, apparatus, etc., at least three times while working the problem	2 _____
(l)	Breathing external air while working problem, each infraction	2 _____
(m)	Unnecessary use of bypass valve, each team member involved	2 _____
(n)	Excessive talking	1 _____
(o)	Excessive use of relief valve, each team member involved	1 _____
(p)	Insufficient or too much oxygen, evidenced by flat or highly inflated breathing bag, etc., each apparatus	2 _____
(q)	Failure of one or more team members to complete problem, each team member failing	10 _____
(r)	Failure to test at all stations for irrespirable or flammable gases, each infraction	2 _____
(s)	If nose clip slips off while problem is being worked and team member replaces clip without breathing external air, do not discount; otherwise discount 2 points	_____
(t)	Failure of team to examine workings thoroughly (traveling too fast, etc.)	2 _____

		Discount
(u)	None of team members having hold of the life line. (At least one team member must keep life line taut at all times in order to give or receive signals.)	2 _____
(v)	Failure to extinguish flame safety lamps in explosive mixture of methane	4 _____
(w)	Failure of team member to cover light or indicate turning off cap lamp while tests for gas are being made with capping flame, each omission	2 _____
(x)	Failure to protect live man or men properly	4 _____
(y)	Failure to clear oxygen breathing apparatus before it is placed on patient	2 _____
(z)	Rough or awkward handling of subject or patient	2 _____
(a1)	Failure to test stretcher before loading patient on it	2 _____
(a2)	Failure to complete problem in time specified; deduct 1 point for 1 minute overtime; thereafter deduct 3 points for each additional minute overtime	_____
	Total discounts	_____

_____ Judge _____ Judge _____ Judge

Team No._____

D. After Working Problem and Leaving Mine

Note: Teams shall not shut off oxygen until judges examine apparatus.

		Discount
(a)	Oxygen supply of team member less than 30 atmospheres, each member	6 _____
(b)	Failure to turn over to judges marked map within 5 minutes after starting consultation, deduct 1 point for each minute or fraction thereof overtime	_____
(c)	Failure to indicate or to incorrectly indicate locations of unusual conditions encountered (location of bodies, live men, falls, tools, explosive gas, smoke, fires, etc.), each infraction 2 points	_____
	Total discounts	_____

_____ Judge _____ Judge _____ Judge

APPENDIX D: RULES GOVERNING MINE RESCUE CONTEST

1. Each team shall be composed of five men, one of whom shall act as captain. Each team member shall be provided with an oxygen breathing apparatus (2-hour type) and closed lights of a type approved by the Bureau of Mines.

2. Each team shall bring one substitute who will be available for use in case of rejection of a team member due to physical unfitness or for a patient if a patient is required in the problem.

3. The substitute or patient shall weigh within 10 pounds of the average weight of the team members.

4. Members of mine rescue teams must not be over 45 years of age, as men older than this will not be permitted to participate.

5. Before the mine rescue contest starts the team captain will present to the chief judge a medical certificate, dated not more than 15 days before the contest, showing that each member of his team (including the team captain) is physically sound and capable of performing strenous work under oxygen.

6. Each crew shall provide its own apparatus, including goggles for each member of team.

7. Goggles should be in place on caps of crew but need not be worn over the eyes unless conditions actually require their use.

8. Any device approved by the Federal Bureau of Mines that will afford the proper protection for a subject under the conditions specified in the problem may be used on the subject.

9. Teams will be required to bring with them a sufficient supply of regenerating material and apparatus accessories for both preliminary examination and performance of problem or problems.

10. Each team will be given a preliminary examination and will perform one or more problems. The teams will be furnished a problem and will be allowed 3 minutes to study it before entering the mine. Problems will be equally applicable to coal- and metal-mining teams.

11. Before the preliminary examination is begun all apparatus must be fully assembled and ready to wear. Oxygen bottles shall be charged to 90 atmospheres or above but not to exceed 150 atmospheres. Teams will be expected to have their apparatus charged with enough oxygen for the contest.

12. If a crew is not ready to proceed with the preliminary examination or the working of the problem, it may, with the approval of the chief judge, waive its numerical position in favor of the next crew that is ready. A crew that waives its numerical place shall automatically take the position of the team replacing it.

13. Life lines, tools, stretchers, brattice boards, canvas, nails, or other material necessary for constructing bulkheads or stoppings, and fire-fighting equipment (if necessary in problem) will be furnished by the field committee.

14. Each team should have its own canary birds and cages or other recognized carbon monoxide detectors and flame safety lamps; however, if a team does not have such equipment it will be furnished by the field committee.

15. Apparatus will be furnished by the field committee for the recovery of men supposed to be entombed. Teams may, however, bring their own apparatus for this purpose if they so desire.

16. All teams not performing problems will be placed in a location where they are unable to obtain information regarding the problem being worked. No person except designated officials will be allowed to communicate with the teams waiting to perform problems. Teams that have performed will not be permitted to communicate with teams awaiting their turn.

17. Accompanying officials, substitutes, or friends of a team shall remain away from the team and make no effort to communicate with it before or during the preliminary examination or the working of the problem.

18. After the team leaves the mine on the completion of the problem and the judges have examined the team, apparatus, etc., the crew will be given five additional minutes for checking and marking the map.

19. The chief judge and his assistants will be men trained in the construction, use, and care of the different types of oxygen breathing apparatus, gas masks, etc., and will not be connected with any of the crews, employers of competing crews, or the manufacturers or agents of breathing apparatus, gas masks, or gas-detecting devices.

20. Infractions of any of the rules governing the mine rescue contest, if such infractions are not covered in the table of discounts, may result in the disqualification of the team or teams involved.

Preliminary Examination of Crews

1. The preliminary examination of crews will be held in the Coliseum, Columbus, Ohio, at 8:30 a. m., October 2, 1951.

2. Examination of crews will be conducted, if possible, in numerical order.

3. During the preliminary examination teams will have apparatus on, charged ready to wear, but will not be under oxygen or required to use oxygen in tests.

4. Teams will be examined by committees of five judges, who will be Bureau of Mines employees. The committees of judges will work under a chief judge.

5. The judges will examine the captain and other team members as to their knowledge of the proper operation, construction, and testing of oxygen breathing apparatus, gas masks, self-rescuers, gas-detecting devices, and methods of procedure.

6. Judges shall not ask questions that do not appear on the score card.

Procedure of Rescue Crews in Performing Problems

1. The mine rescue contest proper will be held at Columbus, Ohio, at 9 a. m., October 2, 1951, immediately after the first team has completed the preliminary examination and has been examined by the physician.

2. Before entering the mine, each man will be given a physical-fitness test as follows:

(a) Let the subject sit quietly 5 minutes or longer; at the end of the period count his pulse for a full minute. If the pulse at this time is 100 or more, the subject should not be allowed to engage actively in rescue and recovery work while wearing oxygen breathing apparatus in irrespirable air.

(b) Next, let the subject step on a chair or other object 18 inches high 15 times in 30 seconds, then count his pulse. To make the test uniform he should stand with one foot on the chair during the test. He should bring the other foot onto the chair or up to its level 15 times at a uniform rate.

(c) After exactly 2 minutes, during which the subject should rest sitting down, count his pulse. Persons whose pulse returns to normal after they have rested 2 minutes following exercise may be considered physically fit. Those whose pulse does not return to normal after 2 minutes of rest following the exercise should be rejected. Any member of the crew showing marked evidence of physical unfitness must be withdrawn and a substitute added.

3. Teams will report to the judges when called upon. Three minutes will then be allowed for study of the problem. Team captains will be allowed two additional minutes for inspection of apparatus in the presence of the judges.

4. Before entering the mine, teams will also be allowed enough time (not over 10 minutes) to assemble or test extra apparatus, devices, equipment, or material that may be required in performing the problem.

5. The crew will then proceed to perform the problem assigned to it.

6. Standard life-line signals will be used by all teams as follows:

1 Pull - "Stop" if traveling or "all right" if at rest.
2 Pulls - "Advance."
3 Pulls - "Retreat" (from fresh-air base to team, "return at once").
4 Pulls - "Distress."

7. Horns or other audible signals between team members will be the same as given for life-line signals.

8. Crews will keep life line taut at all times so that they can give or receive signals.

9. An employee of the Bureau of Mines will operate the life line at the fresh-air base for all crews.

10. The entire gallery, enclosed area, or roped-off space used to represent a portion of a mine will be assumed to be filled with unbreathable atmosphere, unless otherwise specified in problem.

11. The captain will examine gages, apparatus, etc., twice while advancing into the mine and once while coming out.

12. Each crew on reaching the face or breast of a room, chamber, entry, drift, crosscut, etc., will mark the initials or name of the captain or crew and the day, month, and year of the trip to indicate that the area has been explored. Places so marked should be indicated by the crew on the map, which must be turned over to the judges.

13. The working time for the problem will start when the team leaves the fresh-air base and continue until the team completes the problem and leaves the gallery, enclosed area, or roped-off space.

14. The penalty for overtime will be as follows:

	Points discounted
1 Minute overtime.....	1
2 Minutes overtime.....	3
3 Minutes overtime.....	6
4 Minutes overtime.....	10
5 Minutes overtime.....	15

15. A team that has not completed the problem at the end of 5 minutes overtime will be disqualified and conducted from the mine.

16. After the crew has finished the problem, has had apparatus examined by the judges, and has removed mouthpieces and nose clips, 5 minutes will be given to check and mark the map before it is turned over to the judges.

17. The marked map as submitted by the team will be compared with the problem by the judges and credited or charged against the team as marked.

18. A committee of five judges, Bureau of Mines employees, will rate each team as it performs a problem. These committees of judges will work under a chief judge.

APPENDIX E: FIRST-AID PROBLEMS WORKED IN CONTEST

(See figures 2 to 6, inclusive.)

Problem No. 1

Time for reading problem and assembling material, 3 minutes.

A shuttle-car operator dislodges some timbers and receives the following injuries: Fracture of four ribs on left side; blood spurting from a 3-inch wound on outside of right arm 4 inches above point of elbow; a forward dislocation of the left hip; bone protruding from extensive wound on top of right foot; blood oozing from a cut on left side of face; and slight bleeding from a 3-inch wound on the center of the chest midway between the shoulders. Treat and transport patient 25 feet on stretcher. Patient is conscious but suffering from shock.

Working time, 8 minutes.

Injuries:

1. Arterial bleeding, wound on right arm.
2. Physical shock.
3. Wound on right arm.
4. Wound on top of right foot. (Compound fracture.)
5. Wound on left side of face.
6. Wound on chest between shoulders.
7. Fracture of right foot. (Compound fracture.)
8. Fracture of ribs on left side.
9. Dislocation of left hip.
10. Transportation.

Outline for Working Problem[1/]

1. Arterial bleeding from wound on right arm.
   (a) Apply digital pressure at arm pressure point.
   (b) Apply tourniquet at arm pressure point.

2. Physical shock.
   (a) Keep head level with body. Elevate foot end of splint.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by mouth.
   (g) Rub uninjured extremities toward heart.

1/ Page and figure references in these problems are to Bureau of Mines Manual of First-Aid Instruction, 1940 ed.

3. Wound on right arm.
   (a) Apply bandages for wound of arm. (See p. 113 and fig. 34.)

4. Wound on right foot. (Compound fracture.)
   (a) Apply tourniquet loosely at thigh pressure point.
   (b) Apply gauze or compress to extensive wound of foot and cover with triangular bandage. (See p. 133 and fig. 52.)

5. Wound on left side of face.
   (a) Apply bandages as for bleeding of face. (See p. 104 and fig. 26, C.)

6. Wound on chest between shoulders.
   (a) Apply bandages as for wound of chest between shoulders. (See p. 120 and fig. 42, p. 122.)

7. Compound fracture of right foot.
   (a) Support fracture of foot.
   (b) Apply splint and bandages as for fracture of foot. (See p. 195 and fig. 79, p. 196.)

8. Fracture of ribs on left side.
   (a) Apply bandages as for fracture of ribs. (See p. 181 and fig. 72, p. 184.)

9. Dislocation of left hip.
   (a) Apply splint for dislocation of hip. (See p. 165 and fig. 65, p. 166.) Splint should be tested before placing patient on it.

10. Transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)

Problem No. 2

Time for reading problem and assembling material, 3 minutes.

A motorman is knocked from the cab of his motor by a falling timber and receives the following injuries: Fracture of the neck, simple fracture of the right hand, and a wound of the right eyelid. Patient is unconscious and suffering from physical shock. Treat.

Working time, 9 minutes.

Injuries:

1. Physical shock.
2. Wound on right eyelid.
3. Fracture of right hand.
4. Fracture of neck.

Outline for Working Problem

1. Physical shock.
   (a) Do not lower head. (Broken neck.) Keep head level with body. When patient is placed on splint, elevate foot end of splint.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulants by inhalation.
   (g) Rub uninjured extremities toward heart.

2. Wound on right eyelid.
   (a) Apply dressing as for wound of eye. (See p. 104 and fig. 28, p. 106.)

3. Fracture of right hand.
   (a) Support fracture of hand.
   (b) Apply splint as for fracture of hand. (See p. 179 and fig. 71, p. 182.)

4. Fracture of neck.
   (a) Support fractured neck until the fifth bandage is tied.
   (b) Place patient on tested broken-back splint.
   (c) Tie as for broken neck. (See p. 185 and fig. 73, p. 187.)

Problem No. 3

Time for reading problem and assembling material, 3 minutes.

A miner is rescued after an explosion. He is unconscious and apparently not breathing. His left shoulder, arm, forearm, hand, and fingers are burned. He has a 2-inch cut across the right cheek. Resuscitate by all team members, each (except patient) performing artificial respiration for 1 minute; change operators without breaking rhythm. Patient regains consciousness at end of artificial respiration but suffers from shock throughout problem. Treat and prepare for transportation.

Working time, 8 minutes.

Injuries:

1. Artificial respiration.
2. Physical shock.
3. Wound on right cheek.
4. Burns of left shoulder, arm, forearm, hand, and fingers.
5. Prepare for transportation.

Outline for Working Problem

1. Artificial respiration.
   (a) Turn patient face down, supporting, protecting, and keeping other injuries aseptic.
   (b) Remove all foreign bodies from mouth.
   (c) See that tongue is in proper position.
   (d) Loosen tight clothing.
   (e) Turn head to one side, resting on forearm.
   (f) All team members (except patient) perform artificial respiration for 1 minute each (15 respirations per minute.)
   (g) Change operators without breaking rhythm.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is in proper position.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by inhalation; stimulant should be given by mouth after artificial respiration is completed.
   (g) Rub uninjured extremities toward heart.

3. Wound on right cheek.
   (a) Apply bandages as for wound of the face. (See fig. 26, C, p. 105.)

4. Burns of left shoulder, arm, forearm, hand, and fingers. (See pp. 138 and 140 and fig. 58, p. 147.)

5. Prepare for transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)
   (d) Elevate foot end of stretcher.

Problem No. 4

Time for reading problem and assembling material, 3 minutes.

A machineman falls on a cutter bar of an operating mining machine and is rolled against the face of coal by the cutter chain and bits. He is removed from the cutter bar and is found to have the following injuries: Compound fracture of the right leg (blood spurting from a 3-inch wound on the inside of leg, with bone protruding); compound fracture of the left thigh (bone protruding from a 3-inch wound on the outside of the thigh 5 inches above the knee) with arterial bleeding; slight bleeding from a 2-inch wound in the right groin; slight bleeding from a 3-inch wound on the chest midway between shoulders; and slight bleeding from a 1-inch wound on the point of the left elbow. Patient is unconscious and is suffering from physical shock. Treat.

Working time, 10 minutes.

Injuries:

1. Arterial bleeding from right leg. (Compound fracture.)
2. Arterial bleeding from left thigh. (Compound fracture.)
3. Physical shock.
4. Wound on right leg. (Compound fracture.)
5. Wound on left thigh. (Compound fracture.)
6. Wound on chest between shoulders.
7. Wound on left elbow.
8. Wound in right groin.
9. Fracture of right leg. (Compound.)
10. Fracture of left thigh. (Compound.)

Outline for Working Problem

1. Arterial bleeding from right leg. (Compound fracture.)
   (a) Apply digital pressure at knee or thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

2. Arterial bleeding from left thigh. (Compound fracture.)
   (a) Apply digital pressure at thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

3. Physical shock.
   (a) Keep head level with body. Elevate foot end of splint.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by inhalation.
   (g) Rub uninjured extremities toward heart.

4. Wound on right leg. (Compound fracture.)
   (a) Apply bandages as for wound of leg. (See p. 130 and fig. 50, p. 131.)
   (b) Do not tie knot of compress or wide cravat bandage over wound.

5. Wound on left thigh. (Compound fracture.)
   (a) Apply bandages as for wound of thigh. (See p. 128 and fig. 48.)
   (b) Do not tie knot of compress or wide cravat bandage over wound.

6. Wound on chest between shoulders.
   (a) Apply bandages as for wound of chest between shoulders. (See p. 120 and fig. 42, p. 122.)

7. Wound on left elbow.
   (a) Apply bandages as for wound of elbow. (See p. 114 and fig. 35, p. 115.)

8. Wound in right groin.
   (a) Apply bandages as for wound of groin. (See p. 125 and fig. 45, p. 126.)

9. Compound fracture of right leg.
   (a) Support fracture of leg.
   (b) Apply splint for fracture of leg. (See p. 195 and fig. 78, p. 194.)

10. Compound fracture of left thigh.
    (a) Support fracture of thigh. (See p. 193 and fig. 76, p. 192.)

Note: With fracture of two lower extremities (thigh, leg, ankle, kneecap, or dislocation of knee) the broken-back splint can be used. The three bandages around the upper part of splint and body (around the splint and upper part of chest, around the splint and lower part of chest, and around the splint and hips) should be tied on the most-injured side. The bandages around the legs should be applied as described for the injury (thigh, leg, ankle, kneecap, or dislocation of knee.)

Note: The patient may be lifted to place on the splint or splints by a team of five men as follows: Two members of the team can lift from the least-injured side, one at the shoulder and the other at the hip and thighs. One member of the team will be supporting the thigh and another member will be supporting the ankle. These men can take care of lifting the lower extremities. The fifth member of the team can lift from the most-injured side at the shoulders and hip. The patient is to be lifted just high enough to place him on the splint or splints. The man lifting from the most-injured side can place the splint under the patient.

Problem No. 5

Time for reading problem and assembling material, 3 minutes.

A miner is squeezed between a car and mine rib and is found lying face downward. Examination shows a cut on the left kneecap and dislocation of left shoulder. Patient complains of great pain through the pelvis and is suffering from shock. Treat and transport on stretcher 25 feet, return to original position, and unload patient from stretcher. Patient is conscious throughout problem.

Working time, 9 minutes.

Injuries:

1. Physical shock.
2. Wound on left kneecap.
3. Dislocated left shoulder.
4. Fracture of pelvis; patient lying face downward.
5. Transportation.

Outline for Working Problem

1. Physical shock.
   - (a) Remove all foreign bodies from mouth. See that tongue is forward.
   - (b) Loosen tight clothing from waist and neck.
   - (c) Cover patient with blanket after completion of problem.
   - (d) Apply tested heated objects.
   - (e) Give tested stimulant by inhalation while patient is lying face downward and after patient is turned; tested stimulant should be given by mouth.
   - (f) Rub uninjured extremities toward heart.
   - (g) Elevate foot end of splint.

2. Wound on left kneecap.
   - (a) Apply bandages as for wound of knee. (See p. 130 and fig. 49.)

3. Dislocated left shoulder.
   - (a) Apply pad in place under arm extending from armpit to elbow.
   - (b) Apply bandages as for dislocated shoulder. (See p. 158 and fig. 62, A and B.)

4. Fracture of pelvis.
   - (a) Support pelvis until two wide bandages are applied.
   - (b) Place board or splints on patient's back and tie. If wide board is used, pad must be placed between patient's legs before board is tied to patient with five cravat bandages. (See p. 190, fig. 75 using broken-back splint.)

5. Transportation.
   - (a) Open stretcher.
   - (b) Test stretcher.
   - (c) Load patient on stretcher. (Three men on least-injured side.)
   - (d) Carry stretcher 25 feet and return to original position.
   - (e) Unload patient from stretcher.
   - (f) Elevate foot end of stretcher. (See pp. 231 to 266.)

Problem No. 6

Time for reading problem and assembling material, 3 minutes.

A miner comes in contact with a live electric wire, which is down. He is found unconscious, apparently not breathing and lying face downward, with his left thigh, leg, and foot on the wire. He has burns 2 inches wide, extending from the center of the left thigh to the foot, and a wound on the right shoulder. Demonstrate two methods of "shorting" or "cutting off" electric current before removing patient from wire; then resuscitate by all team members, each (except patient) performing artificial respiration for 1 minute, change of operators to be made without breaking rhythm. Patient regains consciousness at the end of artificial respiration but suffers from shock throughout problem. Treat and prepare for transportation.

Working time, 8 minutes.

Injuries:

1. Artificial respiration.
2. Physical shock.
3. Wound on right shoulder.
4. Burn of left thigh.
5. Burn of left leg.
6. Burn of left foot.
7. Prepare for transportation.

"Short" or "cut off" electric current before removing patient from wire. Turn off current by use of switch. Cut wire with ax (dry wooden handle).

Outline for Working Problem

1. Artificial respiration.
   - (a) Remove patient from wire.
   - (b) Remove all foreign bodies from mouth. See that tongue is forward.
   - (c) All team members (except patient) perform artificial respiration for 1 minute each (15 complete strokes per minute).
   - (d) Change operators without breaking rhythm.
   - (e) Loosen tight clothing from waist and neck.

2. Physical shock.
   - (a) Keep head level with body.
   - (b) Remove all foreign bodies from mouth. See that tongue is forward.
   - (c) Loosen tight clothing from waist and neck.
   - (d) Cover patient with blanket after completion of problem.
   - (e) Apply tested heated objects.
   - (f) Give tested stimulant by inhalation. Stimulant should be given by mouth after artificial respiration is completed.
   - (g) Rub uninjured extremities toward heart.
   - (h) Elevate foot end of stretcher.

3. Wound on right shoulder.
   - (a) Apply dressing as for wound of shoulder. (See p. 109 and fig. 32.)

4. Burn of left thigh.
   - (a) Remove all loose clothing from burn.
   - (b) Apply moistened picric acid gauze to burn of thigh. (See p. 144 and fig. 58.)
   - (c) Apply outside dressing to thigh, use wide cravat bandage.

5. Burn of left leg.
   (a) Remove all loose clothing from burn.
   (b) Apply moistened picric acid gauze to burn of leg. (See p. 144 and fig. 58.)
   (c) Apply outside dressing to burn of leg.

6. Burn of left foot.
   (a) Remove all loose clothing from burn.
   (b) Apply moistened picric acid gauze to foot.
   (c) Apply outside dressing to burn of foot. (See p. 146, fig. 52.)

7. Prepare for transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)

Problem No. 7

Time for reading problem and assembling material, 3 minutes.

A surface employee falls from a ladder and receives the following injuries: A sprained left ankle; a fracture of the left collar bone; a 4-inch wound on the outside of the right thigh, spurting blood; and a fracture of the skull, with a 2-inch wound in the center of the forehead. The patient is unconscious throughout problem, face is flushed, skin hot and dry, pulse slow and full, and the eyes are enlarged, but of equal size. Treat and transport on stretcher for 25 feet, return to original position, and unload patient from stretcher.

Working time, 9 minutes.

Injuries:

1. Arterial bleeding. (Wound on right thigh.)
2. Sunstroke.
3. Wound of forehead. (Compound fracture.)
4. Wound of right thigh.
5. Fracture of skull.
6. Fracture of left collar bone.
7. Sprained left ankle.
8. Transportation.

Outline for Working Problem

1. Arterial bleeding. (Wound of right thigh.)
   (a) Apply digital pressure at thigh.
   (b) Apply tourniquet at thigh.

2. Sunstroke. (See p. 95.)
   (a) Elevate the head.
   (b) See that patient is in cool place.
   (c) Remove as much clothing as necessary.
   (d) Apply cold application to body and head.
   (e) Rub uninjured extremities.
   (f) Give no stimulants.

3. Wound of forehead. (Compound fracture.)
   (a) Apply bandages as for wound of forehead. (See p. 104 and fig. 27.)
   (b) Do not tie knot of compress or cravat bandage over wound.

4. Wound of right thigh.
   (a) Apply bandages as for wound of thigh. (See p. 128 and fig. 48.)

5. Fracture of skull.
   (a) Have patient's head raised.
   (b) Apply cold applications to the head. Do not give stimulants.

6. Fracture of left collar bone.
   (a) Support fracture until completely dressed.
   (b) Apply bandages as for fracture of collar bone. (See p. 173 and fig. 67.)

7. Sprain of left ankle.
   (a) Apply cold application, followed by hot application.
   (b) Unlace shoe and apply cravat bandage.
   (c) Elevate foot and ankle. (See p. 150 and fig. 59.)

8. Transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)
   (d) Carry stretcher 25 feet and return to original position.
   (e) Unload patient from stretcher.

Problem No. 8

Time for reading problem and assembling material, 3 minutes.

A fall of rock has been removed from a miner who is found lying face downward and unable to move his lower extremities. He has a dislocated lower jaw and a 2-inch wound across the palm of left hand spurting bright-red blood. Patient is conscious but suffering from shock.

Working time, 9 minutes.

Injuries:

1. Arterial bleeding from palm of left hand.
2. Physical shock.
3. Wound on palm of left hand.
4. Dislocated lower jaw.
5. Broken back; patient lying face downward.

Outline for Working Problem

1. Arterial bleeding from wound of left hand.
   (a) Apply digital pressure at elbow or arm.
   (b) Apply tourniquet to arm pressure point.

2. Physical shock.
   (a) Keep head level with body. Elevate foot of splint.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by inhalation.
   (g) Rub uninjured extremities toward heart.

3. Wound on palm of left hand.
   (a) Apply bandages as for wound of palm of hand. (See p. 116, fig. 37.)

4. Dislocated lower jaw.
   (a) Reduce dislocation.
   (b) Place wedge between teeth.
   (c) Apply bandages as for dislocated jaw. (See pp. 157 and 158 and fig. 61.)

5. Broken back.
   (a) Apply bandages as for broken back. (See p. 188 and fig. 74.)

Problem No. 9

Time for reading problem and assembling material, 3 minutes.

A car dropper slips from a moving car and receives the following injuries: A compound fracture of the right leg, with arterial bleeding; cut on the left eye; wound of the left hip; a dislocated left elbow, with the elbow in a straight position; and the left foot amputated 2 inches above the ankle. Treat and prepare for transportation. He is conscious but suffering from shock.

Working time, 8 minutes.

Injuries:

1. Arterial bleeding from amputated left foot.
2. Arterial bleeding from right leg.
3. Physical shock.
4. Wound on left leg.
5. Wound on right leg. (Compound fracture.)
6. Wound on left eye.
7. Wound on left hip.
8. Fracture of right leg. (Compound fracture.)
9. Dislocation of left elbow. (Arm in straight position.)
10. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding from amputated left foot.
   (a) Apply digital pressure at knee or thigh.
   (b) Apply tourniquet at thigh pressure point.

2. Arterial bleeding from right leg. (Compound fracture.)
   (a) Apply digital pressure at knee or thigh.
   (b) Apply tourniquet at thigh pressure point.

3. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by mouth.
   (g) Rub uninjured extremities toward heart.
   (h) Elevate foot end of stretcher.

4. Wound on left leg. (Amputated.)
   (a) Apply tourniquet at thigh pressure point.
   (b) Apply sterile gauze and cover with open triangular bandage.
   (See pp. 129 and 130.)

5. Wound on right leg. (Compound fracture.)
   (a) Apply tourniquet at thigh pressure point.
   (b) Apply bandages as for wound of leg. (See p. 130 and fig. 50.)
   (c) Do not tie knots over wound.

6. Wound on left eye.
   (a) Apply sterile bandage compress over wound and tie. (See pp. 104 and 106 and fig. 28.)

7. Wound on left hip.
   (a) Apply bandages as for wound of hip. (See p. 125 and fig. 47.)

8. Fracture of right leg.
   (a) Support fracture of leg.
   (b) Apply well-padded splint and bandages as for fracture of leg.
   (See p. 195 and fig. 78.)

9. Dislocation of left elbow.
   (a) Apply straight splint and bandages as for dislocation of elbow.
   (See p. 160 and fig. 63.)

10. Prepare for transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift from least-injured side.)

Problem No. 10

Time for reading problem and assembling material, 3 minutes.

A speeding mine locomotive fails to make a curve and runs off the track. The motorman is thrown from the locomotive, and when found he has the following injuries: Fracture of the skull, with a 2-inch wound in the back of the head; crushed left hand, with the skin scraped off the back of the hand and fingers from the wrist to the end of the fingers; a 2-inch wound on the center of the back of the right hand; slight bleeding from a 3-inch wound in the right armpit; and a dislocation of the bone between the first and second joint of the index finger of the right hand. Patient is unconscious and suffering from physical shock. Treat and prepare for transportation.

Working time, 8 minutes.

Injuries:

1. Physical shock.
2. Wound on back of head. (Compound fracture.)
3. Wound in right armpit.
4. Wound on back of right hand.
5. Crushed left hand.
6. Fracture of skull.
7. Dislocation of index finger on right hand.
8. Prepare for transportation.

Outline for Working Problem

1. Physical shock.
   (a) Do not lower head. (Fractured skull.)
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give no stimulant. (Fractured skull.)
   (g) Rub uninjured extremities toward heart.

2. Wound on back of head. (Compound fracture.)
   (a) Apply bandages as for wound of back of head. (See p. 104.)
   (b) Do not tie knot of compress or cravat over wound.

3. Wound of right armpit.
   (a) Apply bandages as for wound of armpit. (See p. 109 and fig. 33, A and B.)

4. Wound on back of right hand.
   (a) Apply bandages as for wound of back of hand. (See p. 116 and fig. 38.)

5. Crushed left hand.
   (a) Apply tourniquet loosely to arm pressure point.
   (b) Support left hand.
   (c) Apply sterile gauze to open wound of left hand.
   (d) Apply splint as for crushed hand. (See p. 179 and fig. 71.)

6. Fracture of skull.
   (a) Raise patient's head.
   (b) Apply cold application to the head. Do not give stimulant.

7. Dislocation of index finger.
   (a) Reduce dislocation of finger. (See p. 162.)

8. Prepare for transportation. (See pp. 231 to 266.)
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)

Problem No. 11

Time for reading problem and assembling material, 3 minutes.

A miner is caught by a fall of slate and receives the following injuries: Dislocation of the right wrist; slight bleeding from a 3-inch wound in the crotch; blood oozing from a 2-inch wound on the left side of neck and a 2-inch wound on the right knee; dislocation of left knee; and a compound fracture of the left forearm spurting blood. Treat and prepare for transportation. Patient is suffering from physical shock but is conscious during the entire problem.

Working time, 8 minutes.

Injuries:

1. Arterial bleeding from wound in left forearm.
2. Physical shock.
3. Wound on left forearm.

4. Wound in crotch.
5. Wound on left side of neck.
6. Wound on right knee.
7. Fracture of left forearm. (Compound.)
8. Dislocation of left knee.
9. Dislocation of right wrist.
10. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding, wound on left forearm.
   (a) Apply digital pressure at elbow or arm pressure point.
   (b) Apply tourniquet at armpit pressure point.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket after completion of problem.
   (e) Apply tested heated objects.
   (f) Give tested stimulant by mouth.
   (g) Rub extremities toward heart.

3. Wound on left forearm. (Compound fracture.)
   (a) Apply bandages as for wound of forearm. (See p. 114 and fig. 36.)

4. Wound in crotch.
   (a) Apply bandages as for wound of crotch. (See p. 125 and fig. 46, A and B, p. 127.)

5. Wound on left side of neck.
   (a) Apply bandage as for wound of neck. (See p. 109 and fig. 31.)

6. Wound on right knee.
   (a) Apply bandage as for wound of knee. (See p. 130 and fig. 49, p. 129).

7. Fracture of left forearm. (Compound.)
   (a) Support fracture of left forearm.
   (b) Apply padded splint for fracture of forearm.
   (c) Apply bandages as for fracture of forearm. (See p. 177 and fig. 70.)

8. Dislocation of left knee.
   (a) Apply padded splint and bandages as for fracture of thigh. (See pp. 167 and 192, fig. 76.)

9. Dislocation of right wrist.
   (a) Place the forearm in a triangular sling. (See p. 162 and fig. 12, A, p. 47.)

10. Prepare for transportation.
   (a) Open stretcher.
   (b) Test stretcher.
   (c) Load patient on stretcher. (Three men lift on the least-injured side.)
   (d) Raise foot end of stretcher. (See pp. 231 to 266.)

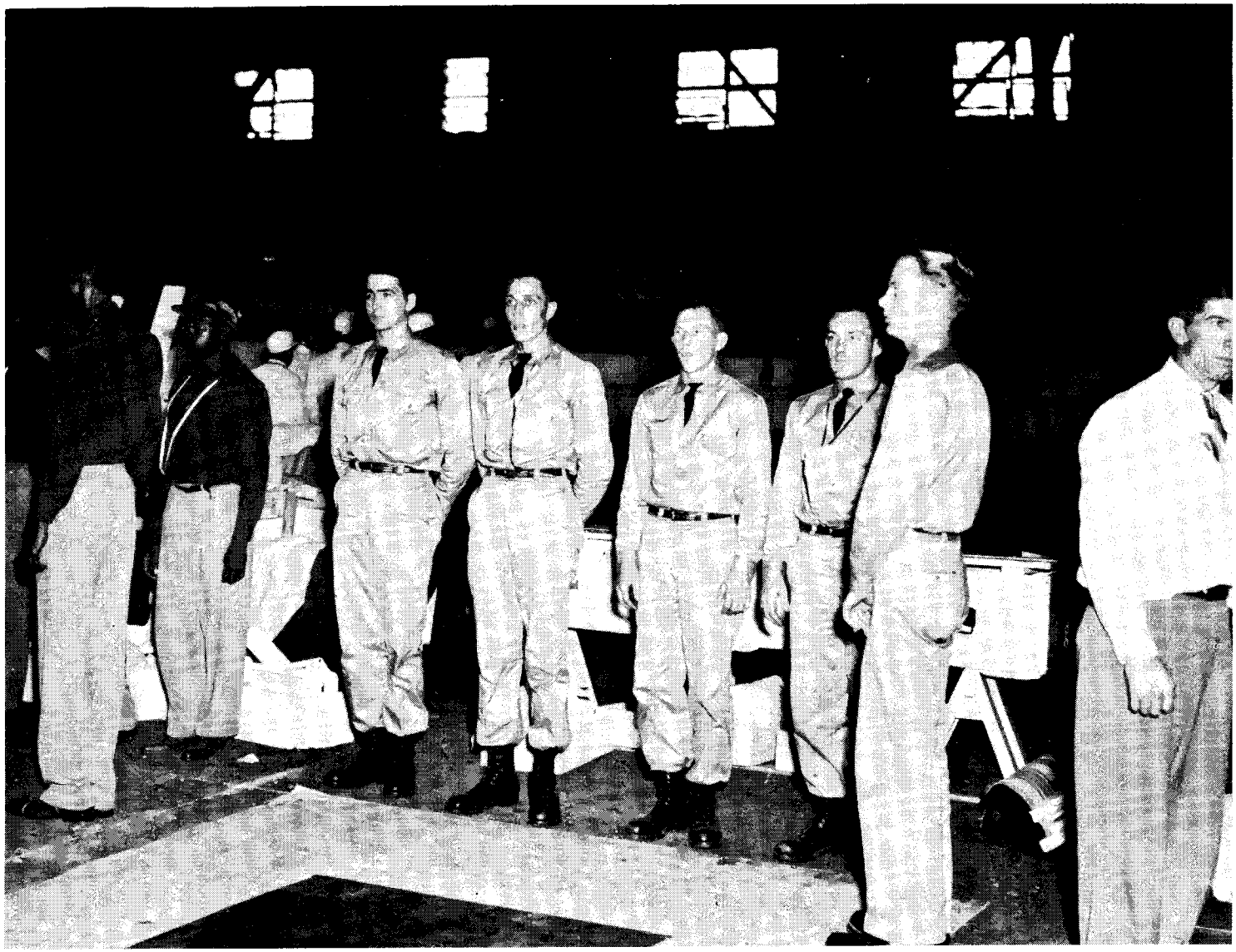

Figure 2. - Team standing at attention about to be handed problem by judge.

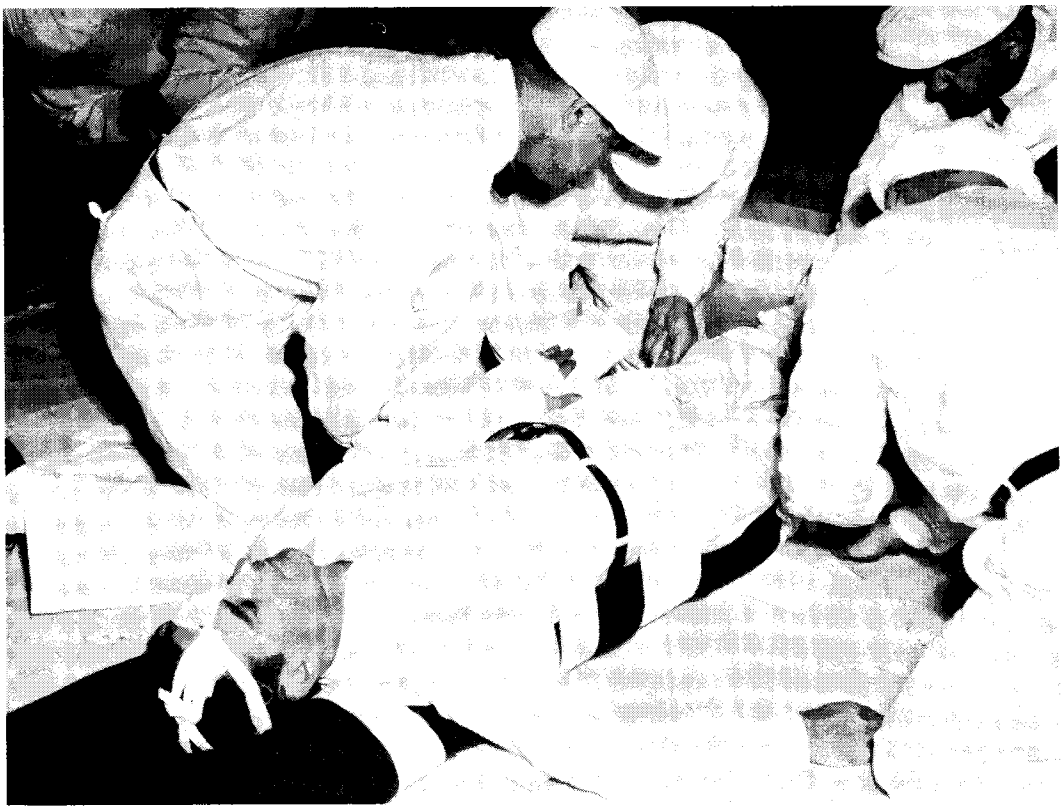

Figure 3. - Treating patient for fracture of lower extremities.

Figure 4. - Placing fractured pelvis splint on patient found lying face down.

Figure 5. - Supporting patient on knees ready for stretcher.

Figure 6. - Judge examining work of team.

APPENDIX F: RULES GOVERNING FIRST-AID CONTEST

1. A team will be composed of six persons, including a captain and patient. An additional person may be carried as a team member to act as an alternate or substitute.

2. No person who has trained or assisted in training a team shall serve as a substitute.

3. If substitutes are on a team, they shall occupy a position back of the material base or other place indicated by the chief judge.

4. Full team events only will be used.

5. Each team will perform the same number of problems (3 or more, but probably 8 or 10). This rule, of course, does not prevent the running off of ties between the individual teams concerned, but the points made in problems performed to decide a tie shall not be included in the total points for the whole contest.

6. The Bureau of Mines Manual of First-Aid Instruction, 1940 edition, is hereby authorized for sole reference and guidance in contest work at this meet. Note: This manual is a revision of the Bureau of Mines Manual of First-Aid Instruction for Miners, 1930 edition.

7. The teams will be numbered consecutively, beginning with No. 1, and they must occupy the position assigned them on the field.

8. The use of banners, lettering, or emblems on garments; marked first-aid boxes and equipment; or means of identification of teams other than by numbers officially assigned will not be permitted on the field.

9. Team members will not be permitted to mark patient to indicate the location or type of an injury or injuries.

10. No practicing will be allowed on the field before the beginning of the contest.

11. All problems will be worked in marked-off spaces, which shall contain only the judges and the contesting teams.

12. All teams not performing a problem will be placed in a location where they are unable to obtain information regarding problem being worked.

13. No persons except designated officials will be allowed to communicate with teams waiting to perform problems or while working problems. Teams that have performed will not be permitted to communicate with teams awaiting their turn.

14. Accompanying officials, substitutes, or friends of a team shall remain away from the team and make no effort to communicate with it during or between problems.

15. All teams and judges will be furnished copies of the contest rules sufficiently in advance of the contest so that they will have time to become familiar with them.

16. The patient shall take his position before the beginning of each problem by lying on his back, head toward team and arms extended alongside of body.

17. The captain, or other team member, may change the position of the patient as required by the problem, during the 3-minute reading period.

18. In problems involving artificial respiration, 15 complete strokes of artificial respiration will be given by each man at a rate of 15 times per minute.

19. Teams shall not be discounted because of any special way of changing operators in artificial respiration so long as the rhythm is not broken.

20. The use of a watch during artificial respiration by team members is prohibited.

21. If conditions make it impracticable for the operator to straddle both thighs, he may assume the position where one thigh is straddled.

22. Support and control of bleeding cannot be done at the same time; one person must support the limb, and another person should control the bleeding.

23. If problem reads, "prepare for transportation," patient must be loaded on stretchers unless otherwise stated in problem.

24. Dress. - (a) Teams performing will wear overalls and jumpers or similar form of dress, such as a two-piece uniform. Jumpers or coats may be removed provided shirts are worn with full-length sleeves.

(b) The patient shall be dressed like other team members, and when taking his position before each problem he shall have the neckband of his shirt and waistband of his trousers buttoned and his belt in place. Shoes may be removed by the patient when told to do so by the team captain.

(c) The use of bathing suits is prohibited.

(d) The use of rubber bands or similar devices on the patient's arms and legs is prohibited.

(e) Bandages shall be applied over the regular uniform worn by the patient.

25. Material. - (a) Teams must bring their own first-aid material, including bandages, splints, blankets, etc.

(b) Only first-aid material as outlined in the Bureau of Mines Manual of First-Aid Instruction, 1940 edition shall be used in this contest, except that no roller bandages shall be used.

(c) Splints or boards shall be of proper size, shall not be previously marked, and shall have no cleats thereon.

(d) Splints shall not be padded or wrapped before any problem requiring their use is begun.

(e) No prepared padding will be permitted; however, triangular bandages or any suitable material may be used for padding that is found in or around mines, mills, quarries, petroleum plants, etc., provided that this material is cut or torn and folded during the working of the problem.

(f) Preparation of bandages or padding before a problem is begun will not be permitted, except that cravat bandages may be folded.

(g) A team or team member will be penalized for leaving the patient to obtain material during the working of a problem.

26. Timing. - (a) Problems will be kept in sealed envelopes, retained by the judges, and given to team captains (unopened) immediately after the sounding of the first gong.

(b) Three minutes will be allowed for reading the problem and assembling first-aid material. This will be indicated by the sounding of a gong.

(c) At the sounding of the first gong, the patient will take his place on the mat.

(d) Unless otherwise specified in the problem, the patient will lie on his back with his head toward the team.

(e) A second gong will be sounded to indicate the time of starting the problem.

(f) A third gong will sound when the time for workingthe problem is up.

(g) Time consumed in excess of that allowed for the problem will be indicated by a gong at 1-minute intervals until all teams have completed the problem.

(h) In any given problem time will not be taken into consideration, unless the team performing exceeds the allotted time or fails to give treatment promptly.

(i) At the conclusion of any problem, the captain must raise his right hand and announce his team number. The team will remain at its post until relieved by the judges.

(j) Teams will be allowed a definite period for removing bandages between problems or leaving the field - approximately 2 minutes.

27. Judging. - (a) Each team as it performs a problem will be rated by a judge or judges. If two or more judges are serving, one will act as chairman and mark the score card.

(b) The judges will be members of the Federal Bureau of Mines or an experienced first-aid judge or instructor, skilled in first-aid training and conversant with Bureau of Mines first-aid standards.

(c) Judges will work under a committee of chief judges, one of whom shall act as chairman.

(d) Judges will perform their work progressively. If two or more judges are judging the same team, they may confer with each other when desirable.

(e) Judges will receive a score card and a copy of the problem, together with an outline of the correct method of working the problem according to the Bureau of Mines Manual of First-Aid Instruction, 1940 edition.

(f) Judges should not ask questions or interfere in any way with a team while it is working the problem.

(g) Judges will be required to examine carefully the work done in each problem.

(h) Judges shall not inform a team as to the discounts charged or discuss discounts with a team within hearing of a team or within hearing of officials or spectators.

(i) Judges should exercise care in marking the discount sheet so that the teams or spectators cannot see or get an idea of the discounts charged.

(j) Judges should mark plainly the team number, problem number, and discounts on the score card and sign the card in the space provided for that purpose. They should not use check marks for discounts. For example, if a team incurred a 1-point discount twice, the score card should be marked 1 - 1 = 2; if a 2-point discount three times, 2 - 2 - 2 = 6, etc.

(k) When the judges have completed the rating of each team, the score cards will be collected by a person or persons designated for this purpose.

(l) Judges should mark on the back of the discount sheet what the teams were discounted for.

28. Score-card examiners. - (a) At least two persons who are not connected with or interested in any team and who are well versed in first-aid work should be appointed to examine the score cards before they are turned over to the recorders.

(b) The score-card examiners shall carefully "check" the score cards to see that there are no improper discounts on the score cards, that the cards are properly signed, and that the totals are correct.

(c) Any score card or cards that are found improperly or not clearly marked shall be returned by messenger to the judge or judges responsible. Any erasures or corrections made by a judge shall be initialed by him.

(d) After the score-card examiners have completed their work the score cards shall be turned over to the recorders.

(e) The score-card examiners shall keep the scores confidential at all times during the contest.

29. Recording. - (a) The recorders will tabulate the scores from the score cards according to the numbers occupied by the teams on the field and not by names of teams.

(b) Scores shall be kept confidential by recorders, and no scores shall be given to anyone before the conclusion and tabulation of the last problem, when they may be given to the Chief Judge who, in turn, will give the results of the contest to the proper authorized officials.

30. Ties. - (a) Announcement of ties will be made and decided as soon as possible after the completion of the regular problem.

(b) All teams shall leave their material in place and remain on the field until scores are tabulated and announcement made regarding ties.

(c) Ties will be decided by one or more problems. Only one score card will be used, regardless of how many judges are serving to judge the event.

(d) Infraction of the above rules, if such infractions are not covered in the table of discounts, may result in the disqualification of the team or teams involved.

31. Miscellaneous. - (a) Broken neck. - Support neck until fifth bandage is tied. If there are other injuries requiring slings, tie arms together of an unconscious patient for transportation. (See p. 168, fig. 66.)

(b) Crushed hand. - Tourniquet loosely arm pressure point.

(c) Compound fracture of foot. - Either way of dressing the foot will be correct.

(d) Stretchers. - Army-type stretchers.

(e) Shock. - Blanket must be used for shock treatments. It must be placed on the patient after the completion of problem.

(f) Dislocated jaw, fractured jaw, broken neck or back. - Stimulants may be given by inhalation.

(g) Use of stimulants. - Must be given at least twice during working of problems. Either raise or turn head of patient when giving stimulants.

(h) Compound fractures of the extremities. - Shall not be arched unless the bone protrudes toward the splint.

(i) Compound fracture of the kneecap. - Start tying the bandages from the top of splint and come down.

(j) A tourniquet shall not be loosened unless the working time of the problem exceeds 10 minutes, then the tourniquet shall be loosened at the end of 10 minutes. (This does not mean that during the working of a problem the tourniquet shall be kept so tight as to cut off circulation.)

APPENDIX G: FIRST-AID PRACTICE PROBLEMS

Problem No. 1

Working time, 10 minutes.

A miner is rescued and removed to fresh air after an explosion of gas. He is breathing but has the following injuries: Burns of the head, face, and neck; burns of the chest and abdomen to waist; burns of the entire back to waist; and burns of both arms, forearms, and hands. Patient is conscious but suffering from shock.

Injuries:

1. Physical shock.
2. Burns of head, face, and neck.
3. Burns of chest and abdomen to waist.
4. Burns of entire back to waist.
5. Burns of both arms, forearms, and hands.

Outline for Working Problem[1/]

1. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign substances from mouth (wrap fingers in sterile gauze.) See that tongue is forward.
   (c) Cover patient with blanket (avoiding upper part of body until dressings have been applied).
   (d) Apply tested heated objects to lower extremities.
   (e) Give stimulant by inhalation.
   (f) Rub lower extremities toward heart.

2. Burns of head, face, and neck.
   (a) Apply moistened picric acid gauze to burns of head, face, and neck.
   (b) Place picric acid gauze between ears and head.
   (c) Apply bandages as for burns of head, face, and neck. (See p. 138 and fig. 53.)

3. Burns of chest and abdomen to waist.
   (a) Remove loose clothing from burned surface.
   (b) Apply moistened picric acid gauze to burns of chest and abdomen.
   (c) Apply bandages as for burns of chest and abdomen. (See p. 144 and fig. 57.)

4. Burns of entire back to waist.
   (a) Remove loose clothing from burned surface.
   (b) Apply moistened picric acid gauze to entire back to waist.
   (c) Apply bandages as for burns of back and shoulders. (See p. 140 and fig. 56, p. 143.)

5. Burns of both arms, forearms, and hands.
   (a) Remove loose clothing from burned surfaces.
   (b) Apply moistened picric acid gauze to burns of arms, forearms, and hands.
   (c) Place picric acid gauze between fingers.
   (d) Apply bandages for burns of arms, forearms, and hands. (See p. 140 and figs. 54 and 55, pp. 141 and 142.)

Problem No. 2

Working time, 10 minutes.

A miner is caught by a fall of slate and receives the following injuries: Dislocation of right elbow (elbow held in "L" position); a 2-inch wound on the left side of the neck oozing blood; a 3-inch wound on the point of the left shoulder oozing blood; and a hernia on the right side. Patient is suffering from physical shock but is conscious throughout the problem. Treat.

Injuries:

1. Physical shock.
2. Wound on left side of neck.
3. Wound on left shoulder.
4. Hernia (right side).
5. Dislocation of right elbow (elbow held in "L" position).

1/ Page and figure references in these problems are to Bureau of Mines Manual of First-Aid Instruction, 1940 ed.

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objected.
   (f) Give stimulant by mouth.
   (g) Rub extremities toward heart.
2. Wound on left side of neck.
   (a) Apply dressing as for wound on the neck. (See p. 109 and fig. 31.)
3. Wound on left shoulder.
   (a) Apply dressing as for wound of shoulder. (See p. 109 and fig. 32, p. 110.)
4. Hernia on right side.
   (a) Lay the patient on his back with knees well drawn up.
   (b) Support by a large pad.
   (c) Apply bandage as for hernia. (See p. 150 and fig. 60, p. 152.)
   (d) Apply ice or cold applications to right groin.
5. Dislocation of right elbow (held in "L" position).
   (a) Apply dressing as for dislocation of elbow. (See p. 160 and fig. 70, p. 180. Do not use fig. 64, p. 164.)

Problem No. 3

Working time, 10 minutes.

A miner is caught by a fall of slate and receives the following injuries: Dislocation of left knee; dislocation of left wrist; a 3-inch wound in the crotch bleeding slightly; a 2-inch wound on the right side of the chest, 4 inches from the armpit, bleeding slightly; and a 1/2-inch wound on the back of the middle joint of the index finger of the left hand bleeding slightly. Patient is unconscious and suffering from physical shock. Treat and prepare for transportation.

Injuries:

1. Physical shock.
2. Wound in crotch.
3. Wound on chest (right side).
4. Wound on finger (left hand, index finger).
5. Dislocation of knee (left).
6. Dislocation of wrist (left).
7. Prepare for transportation.

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing at neck and waist.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by inhalation.
   (g) Rub uninjured extremities toward heart.
2. Wound in crotch.
   (a) Apply dressing as for wound in crotch. (See p. 125 and fig. 46, A and B, p. 127.)
3. Wound on right side of chest.
   (a) Apply dressing as for wound on side of chest. (See p. 123 and fig. 43, A, p. 124.)

4. Wound on index finger of left hand.
   (a) Apply dressing as for wound of finger. (See p. 118.)

5. Dislocation of left knee.
   (a) Apply splint as for dislocation of knee. (See p. 167 and fig. 76, p. 192.)

6. Dislocation of left wrist.
   (a) Place the forearm in a triangular bandage sling. (See p. 162 and fig. 12, A, p. 47.)

7. Prepare for transportation.
   (a) Patient is unconscious. Tie hands as shown in figure 66, page 168.
   (b) Load patient on tested stretcher.

Problem No. 4

Working time, 10 minutes.

A surface employee receives the following injuries: Wound on the inside right forearm 5 inches above the wrist, with arterial bleeding; fracture of left collarbone; and sprained right ankle. The patient is unconscious; face is flushed; skin is hot and dry; pulse is slow and full; and the pupils of the patient's eyes are enlarged, but of equal size. Treat and prepare for transportation.

Injuries:

1. Arterial bleeding from a wound on the right forearm.
2. Wound on inside of right forearm.
3. Sunstroke.
4. Fracture of left collarbone.
5. Sprained right ankle.
6. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding from wound on right forearm.
   (a) Apply digital pressure at elbow pressure point.
   (b) Apply tourniquet at arm pressure point.

2. Wound on inside of right forearm.
   (a) Apply dressing as for wound of forearm. (See p. 114 and fig. 36.)

3. Sunstroke.
   (a) Remove patient to cool place.
   (b) Elevate head by placing pad under the shoulders and head.
   (c) Apply cold applications to the body and head.
   (d) Rub patient's uninjured limbs to prevent shock.
   (e) Give no stimulants. (See p. 95.)

4. Fracture of left collarbone.
   (a) Support fracture of collarbone.
   (b) Apply pad and cravat bandages as for fracture of collarbone. (See p. 173 and fig. 67, A, B, and C, p. 175.)

5. Sprained right ankle.
   (a) Apply cravat bandage as for sprained ankle. (See p. 150 and fig. 59.)
   (b) Apply cold applications.
   (c) Elevate in place by placing on pad.

6. Prepare for transportation.
   (a) Test stretcher (Army or improvised).
   (b) Load patient on stretcher. (See p. 257 and figs. 107 and 108, pp. 258 and 259.)

Problem No. 5

Working time, 10 minutes.

A trackman is hit by a trip of cars and is found with the following injuries: Dislocation of left shoulder; the bone of the right thigh is protruding on the inside, midway between the crotch and knee with blood spurting from the wound; and a 1/2-inch wound on the right eyelid oozing blood. Patient is conscious during the entire problem. Treat and prepare for transportation.

Injuries:

1. Arterial bleeding, wound on right thigh (compound fracture).
2. Physical shock.
3. Wound on right thigh. (Compound fracture.)
4. Wound on right eyelid.
5. Compound fracture of right thigh.
6. Dislocation of left shoulder.
7. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding on right thigh.
   (a) Apply digital pressure on thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub uninjured extremities toward heart.

3. Wound on right thigh.
   (a) Apply dressing as for wound of thigh. (See p. 128 and fig. 48.)
   (b) Do not tie knot of compress or cravat bandages over wound.

4. Wound on right eyelid.
   (a) Apply dressing as for wound of eye. (See p. 104 and fig. 28, p. 106.)

5. Compound fracture of right thigh.
   (a) Support fracture of thigh.
   (b) Apply splint for fracture of thigh. (See p. 193 and fig. 76.)

6. Dislocation of left shoulder.
   (a) Apply dressing for dislocation of shoulder. (See p. 158 and fig. 62, A and B, p. 161.)

7. Prepare patient for transportation.
   (a) Test stretcher (Army or improvised). (See p. 247.)
   (b) Load patient on stretcher. (See p. 257 and fig. 108, p. 259.)

Problem No. 6

Working time, 10 minutes.

A trackman is hit by a runaway mine car and receives the following injuries: A compound fracture of the left forearm with a bone protruding on inside of forearm midway between elbow and wrist, and blood spurting from the wound; a simple fracture of the left foot; and a simple fracture of the right hand. Patient is suffering from physical shock but is conscious during the entire problem. Treat and prepare for transportation.

Injuries:

1. Arterial bleeding from wound on left forearm.
2. Physical shock.
3. Wound on left forearm.
4. Compound fracture of left forearm.
5. Simple fracture of left foot.
6. Fracture of right hand.
7. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding, wound on left forearm.
   (a) Apply digital pressure at elbow pressure point.
   (b) Apply tourniquet at armpit pressure point.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub extremities toward heart.

3. Wound of left forearm. (Compound fracture.)
   a. Apply dressing as for wound of forearm. (See p. 114 and fig. 36.)
   b. Do not tie knots of compress and cravat bandages over wound.

4. Compound fracture of left forearm.
   (a) Support fracture of forearm.
   (b) Apply splint for fracture of forearm. (See p. 177 and fig. 70, p. 180.)
   (c) Form arch in padding where bone is protruding.

5. Simple fracture of left foot.
   (a) Support fracture of foot.
   (b) Apply splint for fracture of foot. (See p. 195 and fig. 79, p. 196.)

6. Simple fracture of right hand.
   (a) Support fracture of hand.
   (b) Apply dressing for fracture of hand. (See p. 179 and fig. 71, p. 182.)

7. Prepare for transportation.
   (a) Test stretcher.
   (b) Load patient on stretcher. (See p. 257 and fig. 108, p. 259.)

Problem No. 7

Working time, 10 minutes.

A miner who has been removed from under a fall of rock is found to have the following injuries: Fracture of ribs on right side; fracture of neck; and a 3-inch wound on the point of right hip. The patient is unconscious and suffering from physical shock. Treat.

Injuries:

1. Physical shock.
2. Wound on point of right hip.
3. Fracture of ribs (right side).
4. Fracture of neck.

Outline for Working Problem

1. Physical shock.
   (a) Do not lower head. (Broken neck.) Keep head level with body. When patient is placed on splint elevate foot end of splint.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by inhalation.
   (g) Rub extremities toward heart.

2. Wound on point of right hip.
   (a) Apply dressing as for wound of hip. (See p. 125 and fig. 47, p. 128.)

3. Fracture of ribs (right side).
   (a) Apply three cravat bandages as for fracture of ribs. (See p. 181 and fig. 72, p. 184.)

4. Fracture of neck (broken neck).
   (a) Support broken neck.
   (b) Place on tested broken-back splint.
   (c) Tie as for broken neck. (See p. 185 and fig. 73, p. 187.)

Problem No. 8

Working time, 10 minutes.

A miner is found under a slate fall, and after the material has been removed the following symptoms and injuries were observed: Breathing shallow and feeble; eyes dull with large pupils; body covered with a cold sweat; patient has great difficulty in talking, as there is deformity on the outside of right lower jaw; a 2-inch wound on the palm of the left hand spurting blood; and dislocation of the left hip. Treat and prepare for transportation.

Injuries:

1. Arterial bleeding (wound on the palm of left hand).
2. Physical shock.
3. Wound on palm of left hand.
4. Fracture of lower jaw.
5. Dislocation of left hip.
6. Prepare for transportation.

Outline for Working Problem

1. Arterial bleeding from wound on palm of left hand.
   (a) Apply digital pressure at wrist or elbow pressure point.
   (b) Apply tourniquet at arm pressure point.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub extremities toward heart.

3. Wound on palm of left hand.
   (a) Apply dressing for wound of palm of hand. (See p. 116 and fig. 37.)

4. Fracture of lower jaw.
   (a) Apply dressings as for fracture of lower jaw. (See p. 173 and fig. 61, A and B, p. 159.)

5. Dislocation of left hip.
   (a) Apply splint as for dislocation of hip. (See p. 165 and fig. 65, p. 166.) Test splint before placing patient on it.

6. Prepare for transportation.
   (a) Test stretcher.
   (b) Load patient on stretcher. (See p. 257 and fig. 108, p. 259.)

Problem No. 9

Working time, 10 minutes.

A man falls from a railroad car and is found lying face down with a broken back and a 6-inch wound running from a point 3 inches above the right eye toward the back of the head. The patient is conscious but suffering from physical shock. Treat.

Injuries:

1. Physical shock.
2. Extensive wound on head.
3. Broken back. (Patient lying face down.)

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth or inhalation.
   (g) Rub uninjured extremities toward heart.

2. Extensive wound of head.
   (a) Apply dressing as for extensive wounds of head. (See p. 102 and fig. 25, A and B.)

3. Broken back. (Patient lying face down.)
   (a) Test broken-back splint.
   (b) Lift patient on broken-back splint (face down).
   (c) Apply broken-back splint. (See p. 188 and fig. 74.)

Problem No. 10

Working time, 10 minutes.

A miner has been removed from under a rock fall and has the following injuries: Dislocation of middle joint of little finger on left hand; dislocation of lower jaw; simple fracture of upper third of right arm; and compound fracture of right leg (bone protruding from a 4-inch wound on the inside of leg midway between knee and ankle), with arterial bleeding. Patient is conscious but suffering from physical shock. Treat.

Injuries:

1. Arterial bleeding from wound on right leg.
2. Physical shock.
3. Wound on right leg. (Compound fracture.)
4. Compound fracture of right leg.
5. Simple fracture of upper third of right arm.
6. Dislocation of lower jaw.
7. Dislocation of middle joint on little finger of left hand.

Outline for Working Problem

1. Arterial bleeding from wound on right leg.
   (a) Apply digital pressure at knee or thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from the mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub extremities toward heart.

3. Wound on right leg.
   (a) Apply bandages as for wound of leg. (See p. 130 and fig. 50.)
       Do not tie knot of compress or cravat bandage over wound.

4. Compound fracture of right leg.
   (a) Support fracture of leg.
   (b) Apply splint as for fracture of leg. (See p. 195 and fig. 78.)

5. Simple fracture of upper third of right arm.
   (a) Support fracture of arm.
   (b) Apply bandages as for fracture of upper third of arm. (See p. 177 and fig. 69, p. 178.)

Note: The bandages for fracture of arm will be completed before patient is placed on splint for fracture of leg. In placing the bandages around the upper part of chest and lower part of chest for fracture of leg, put them on the outside of the completed bandage for fracture of the upper third of the arm.

6. Dislocation of lower jaw.
   (a) Set dislocation of jaw.
   (b) Place pad between teeth.
   (c) Apply bandages as for dislocation of lower jaw. (See p. 157 and fig. 61, A and B, p. 159.)

7. Dislocation of middle joint of little finger. (Left hand.)
   (a) Reduce dislocation of finger. (See p. 162.)

Problem No. 11

Working time, 10 minutes.

A speeding mine locomotive fails to make a curve and runs off the track. The operator is thrown from the locomotive and when found has the following injuries and symptoms: He is lying on his back and lying straight but is paralyzed from the waist down; blood is oozing from a wound 1 inch long on the point of the chin; blood is oozing from a wound 2 inches long on the outside of the right ankle; the patient answers questions slowly; his breathing is shallow and feeble; his eyes are dull with large pupils; and he is covered with a cold sweat. Treat.

Injuries:

1. Physical shock.
2. Wound on right ankle.
3. Wound on chin.
4. Fracture of back (patient lying on his back).

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body. (Raise foot end of broken-back splint by placing on block.)
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Give stimulant by mouth or inhalation.
   (f) Rub extremities toward heart.

2. Wound on right ankle.
   (a) Apply bandage as for wound on ankle. (See p. 133 and fig. 51.)

3. Wound on chin.
   (a) Apply bandage as for wound of chin. (See p. 108 and fig. 30, p. 107.)

4. Fracture of back. Patient lying face up.
   (a) Test broken-back splint.
   (b) Apply splint. (Do not attempt to turn patient over until the splint is applied. Apply the splint to the front of the body on top of the patient.
   (c) Tie bandages in their regular order, except the anchor bandages around the shoulders.
   (d) Bind the forearms to the sides of the body with a cravat bandage temporarily.
   (e) Then turn patient over to a face-down position.
   (f) Apply shoulder anchor bandages. (See p. 188 and fig. 74.)

Problem No. 12

Working time, 10 minutes.

A miner has been removed from a fall of rock and has the following injuries: A compound fracture of the left kneecap with slight bleeding; dislocation of the right elbow with the arm held in the straight position; wound on the lower part of the abdomen; and a 3-inch wound in the center of the back between the shoulders. The patient is conscious but is suffering from physical shock. Treat and transport 25 feet on improvised stretcher.

Injuries:

1. Physical shock.
2. Wound on lower part of abdomen.
3. Wound on back between shoulders.
4. Wound on left kneecap.
5. Compound fracture of left kneecap.
6. Dislocation of right elbow. (Elbow in straight position.)
7. Transportation.

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub uninjured extremities toward heart.

2. Wound on lower part of abdomen.
   (a) Apply bandages as for wound of lower part of abdomen. (See p. 123 and fig. 44, p. 126.)

3. Wound on back between shoulders.
   (a) Apply bandages as for wound of back between shoulders. (See p. 120 and fig. 41.)

4. Wound on left kneecap. (Compound fracture.)
   (a) Apply bandages as for wound of kneecap. (See p. 130 and fig. 49.)

5. Compound fracture of left kneecap.
   (a) Support fracture of left kneecap.
   (b) Apply loose tourniquet at thigh pressure point.
   (c) Apply splint for fracture of kneecap. (See p. 193 and fig. 77, p. 194.)

6. Dislocation of right elbow. (Elbow in straight position.)
   (a) Apply splint for dislocation of elbow. (See p. 160 and fig. 63, p. 163.)

7. Transportation.
   (a) Make up improvised stretcher. (See p. 247 and fig. 100, p. 250.)
   (b) Test stretcher.
   (c) Transport. (See pp. 253 to 266.)

Problem No. 13

Working time, 10 minutes.

A timberman is caught and squeezed between a mine car and timber and receives the following injuries: He complains of great pain through the pelvis; the skin has been scraped off the inside of the right foot from the heel and ankle to the base of the big toe; blood is oozing, and the end of the bone can be seen in a 2-inch vertical wound on top of the right foot, starting 2 inches back from the base of the little toe; and a bone is protruding from a 2-inch wound on the outside of the right arm 2 inches above the bend of the elbow, with blood oozing from the wound. The patient is suffering from physical shock. Treat.

Injuries:

1. Physical shock.
2. Wound on right foot. (Compound fracture.)
3. Wound on right arm. (Compound fracture.)
4. Compound fracture of right foot.
5. Compound fracture of right lower two-thirds of arm.
6. Fracture of pelvis.

Outline for Working Problem

1. Physical shock.
   (a) Keep head level with body. (Raise foot end of pelvis board by placing blocks under it.)
   (b) Remove foreign objects from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by mouth.
   (g) Rub extremities toward heart.

2. Wound on right foot. (Compound fracture of foot.)
   (a) Apply gauze to extensive wound of foot and apply triangular bandage as for extensive wound of foot. (See p. 133 and fig. 52.)

3. Wound on right arm. (Compound fracture.)
   (a) Apply bandages for wound of arm. (See p. 113 and fig. 34.) Do not tie compress or cravat bandages over wound.

4. Compound fracture of right foot.
   (a) Support fracture of foot.
   (b) Apply tourniquet loosely at thigh pressure point.
   (c) Apply splint and bandages as for fracture of foot. (See p. 195 and fig. 79, p. 196.)

5. Compound fracture of right arm.
   (a) Support fracture of arm.
   (b) Apply tourniquet loosely at armpit pressure point.
   (c) Apply splints and bandages for fracture of lower two-thirds of arm. (See p. 177 and fig. 70, p. 180.)

6. Fracture of pelvis.
   (a) Support pelvis.
   (b) Apply splint. (Pelvis board or broken-back splint.) (See p. 190 and fig. 75, p. 192.)

Problem No. 14

Working time, 10 minutes.

A miner comes in contact with an electric wire that is down. He is found unconscious, apparently not breathing and lying on his back, with his right foot, leg, and thigh on the wire. He has burns 2 inches wide, extending from his heel to center of the back of the right thigh. Demonstrate two methods of "shorting" or "cutting off" electric current before removing patient from wire; then resuscitate by all team members, each (except patient) performing artificial respiration for 1 minute, change of operators to be made without breaking rhythm. Patient regains consciousness at end of artificial respiration but suffers from shock throughout problem. Treat.

Injuries:

1. Artificial respiration.
2. Physical shock.
3. Burns of thigh.
4. Burns of leg.
5. Burns of foot.

"Short" or "cut off" electric current before removing patient from wire. Turn off current by use of switch. Cut wire with ax (dry wooden handle).

Outline for Working Problem

1. Artificial respiration.
   (a) Remove patient from wire.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) All team members (except patient) perform artificial respiration for 1 minute each (15 strokes per minute).
   (d) Change operators without breaking rhythm.

2. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket. (Do not cover right thigh, leg, and foot until burn dressings are complete.)
   (e) Apply tested heated objects.
   (f) Give stimulant by inhalation. Stimulant should be given by mouth after artificial respiration is completed.
   (g) Rub uninjured extremities toward heart.

3. Burns on thigh (right).
   (a) Remove all loose clothing from burns.
   (b) Apply moistened picric acid gauze to burn of thigh.
   (c) Apply burn dressing to thigh. (See p. 144 and fig. 58, p. 147.)

4. Burn of leg (right).
   (a) Remove all loose clothing from burn.
   (b) Apply moistened picric acid gauze to burn of leg.
   (c) Apply outside dressing for burn of leg. (See p. 146 and fig. 58.)

5. Burn of foot (right heel).
   (a) Remove all loose clothing from burn.
   (b) Apply moistened picric acid gauze to burn of heel.
   (c) Apply outside dressing as for burn of foot. (See p. 146 and fig. 52, p. 132.)

Problem No. 15

Working time, 10 minutes.

A machineman falls on a cutter bar of an operating mining machine and is rolled against the face of coal by the cutter chain and bits. He is removed from the cutter bar and is found to have the following injuries: Compound fracture of right ankle (blood spurting from a wound 3 inches long on the outside of ankle, with bone protruding); compound fracture of the left thigh (bone protruding from a 4-inch wound on the inside of the thigh 5 inches above the knee) with arterial bleeding; slight bleeding from a 2-inch wound in the groin, midway between the crotch and the point of the right hip, slight bleeding from a 3-inch wound on the center of the chest midway between the shoulders; and slight bleeding from a 1-inch wound on the point of the left elbow. Patient is unconscious and is suffering from physical shock. Treat.

Injuries:

1. Arterial bleeding from the right ankle. (Compound fracture.)
2. Arterial bleeding from the left thigh. (Compound fracture.)
3. Physical shock.
4. Wound on right ankle. (Compound fracture.)
5. Wound on left thigh. (Compound fracture.)
6. Wound on chest between shoulders.
7. Wound on left elbow.
8. Wound in groin.
9. Fracture of ankle. (Compound.)
10. Fracture of thigh. (Compound.)

Outline for Working Problem

1. Arterial bleeding from right ankle. (Compound fracture.)
   (a) Apply digital pressure at knee or thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

2. Arterial bleeding from the left thigh. (Compound fracture.)
   (a) Apply digital pressure at thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

3. Physical shock.
   (a) Keep head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give stimulant by inhalation.
   (g) Rub uninjured extremities toward heart.

4. Wound on right ankle. (Compound fracture.)
   (a) Apply bandages as for wound of ankle. (See p. 133 and fig. 51.)
   (b) Do not tie knot of compress or cravat bandage over wound.

5. Wound on left thigh. (Compound fracture.)
   (a) Apply bandages as for wound on thigh. (See p. 128 and fig. 48.)
   (b) Do not tie knot of compress or cravat bandage over wound.

6. Wound on chest between shoulders.
   (a) Apply bandages as for wound of chest between shoulders. (See p. 120 and fig. 42, p. 122.)

7. Wound on left elbow.
   (a) Apply bandages as for wound on elbow. (See p. 114 and fig. 35.)

8. Wound on right groin.
   (a) Apply bandages as for wound of groin. (See p. 125 and fig. 45, p. 126.)

9. Compound fracture of right ankle.
   (a) Support fracture of ankle.
   (b) Apply splint for fracture of ankle. (See p. 193 and fig. 76.)

10. Compound fracture of left thigh.
   (a) Support fracture of thigh.
   (b) Apply splint for fracture of thigh. (See p. 193 and fig. 76.)

Note: With fracture of two lower extremities (thigh, leg, ankle, kneecap, or dislocation of knee) the broken-back splint can be used. The three bandages around the upper part of splint and body (around the splint and upper part of chest, around the splint and lower part of chest, and around the splint and hips) should be tied on the most-injured side. The bandages around the legs should be applied as described for the injury (thigh, leg, ankle, kneecap, or dislocation of knee).

Note: The patient may be lifted to place on the splint or splints by a team of five men as follows: Two members of the team can lift from the least-injured side, one at the shoulder and the other at the hip and thigh. One member of the team will be supporting the thigh, and another member will be supporting the ankle. These men can take care of lifting the lower extremities. The fifth member of the team can lift from the most-injured side at the shoulders and hip. The patient is to be lifted just high enough to place him on the splint or splints. The man lifting from the most-injured side can place the splint under the patient.

Problem No. 16

Working time, 10 minutes.

A speeding mine locomotive fails to make a curve and runs off the track. The operator is thrown from the locomotive, and when found he has the following injuries:

Fracture of the skull, with a 2-inch wound in the center of the forehead; crushed left hand, with the skin scraped off the back of the hand and fingers from wrist to the end of the fingers; a 2-1/2-inch wound on the center of the back of the right hand; slight bleeding from a 3-inch wound in the right armpit; and a fracture of the bone between the first and second joint of the index finger of the right hand. Patient is unconscious and suffering from physical shock. Treat.

Injuries:

1. Physical shock.
2. Wound on forehead.
3. Wound in right armpit.
4. Wound on back of right hand.
5. Crushed left hand.
6. Fracture of skull.
7. Fracture of index finger on right hand.

Outline for Working Problem

1. Physical shock.
   (a) Do not lower head. (Fractured skull.)
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from waist and neck.
   (d) Cover patient with blanket.
   (e) Apply tested heated objects.
   (f) Give no stimulants. (Fractured skull.)
   (g) Rub uninjured extremities toward heart.

2. Wound on forehead. (Compound fracture.)
   (a) Apply bandages as for wound of forehead. (See p. 104 and fig. 27, p. 106.) Do not tie knot of compress or cravat bandage over wound.

3. Wound of right armpit.
   (a) Apply bandages as for wound of armpit. (See p. 109 and fig. 33, A and B, p. 112.)

4. Wound on back of right hand.
   (a) Apply bandages as for wound of back of hand. (See p. 116 and fig. 38.)

5. Crushed left hand.
   (a) Apply sterile gauze to open wound of hand.
   (b) Apply splint as for crushed hand. (See p. 179 and fig. 71, p. 182.) Apply tourniquet loosely to the arm pressure point.

6. Fracture of skull.
   (a) Raise patient's head.
   (b) Apply cold applications to the head. Do not give stimulants.

7. Fracture of index finger (right hand).
   (a) Apply splint as for fracture of finger. (See p. 181.)

APPENDIX H: JUDGES' DISCOUNT SHEET, FIRST-AID CONTEST

Problem No. _____ Team No. _____

National First-Aid Contest

1951

JUDGE'S DISCOUNT SHEET

Note: Teams shall not be discounted more than once for any one mistake in the same problem where such mistake may be discounted under more than one of the 15 sections of discounts.

Teams will be charged additional discounts for repetition of the same mistakes in the same problem. For example: Two tight bandages, 4 points; three granny knots, 3 points, etc.

Teams will not be discounted for doing more than the problem calls for unless it is detrimental to the patient.

	Discount	
1. General:		
(a) Treating wrong condition (dislocation for fracture, sunstroke for heat exhaustion, etc.), each	6	
(b) Treating wrong location of injury (wrong side of body, arm for forearm, thigh for leg, etc.), each	4	
(c) Not treating injuries in their proper order (most severe one first, etc.), each	4	
(d) Not taking enough material to complete problem, each trip back	2	
(e) Unclean first-aid material (compress, bandage, etc.), each	2	
(f) Assistance lent by patient (physical or verbal), each time	2	
(g) Rough, awkward, or unnecessary handling of patient, each infraction	4	
(h) Lack of attention by team members, each infraction	2	
(i) Lack of neatness (compress, bandage, splint, padding, etc.), each	1	
(j) Slowness in work, each minute or fraction overtime	1	
2. Artificial respiration:		
(a) Not giving artificial respiration in required cases	20	
(b) Unnecessary delay in starting artificial respiration	8	
(c) Not removing patient from dangerous gas, roof, electric wire, etc.	6	
(d) Not insulating or protecting oneself when removing patient from electric wire or dangerous gas	6	
(e) Not demonstrating method of cutting off current or removing water if drowning case, each infraction	2	
(f) Not placing patient in proper position (body, head, arms, etc.)	2	
(g) Not loosening tight clothing (neck and waistline), each	2	
(h) Not removing foreign substances from mouth	2	
(i) Not seeing that the tongue is in proper position	2	
(j) Incorrect method (Sylvester for prone method, etc.), each man	4	
(k) Incorrect position of operator, causing inefficient respiration, each man	4	
(l) Improper position of operator's hands, each man	2	
(m) Swinging too far forward when applying pressure, each man	2	
(n) Bending elbows (prone method), each man	2	
(o) Not removing hands and assuming proper position between applications of pressure, each man	2	
(p) Incorrect timing: For each 2 seconds or fraction thereof over or under 60 seconds in giving 15 complete strokes of artificial respiration, each infraction	1	
No. 1 man		
No. 2 man		
No. 3 man		
No. 4 man		
No. 5 man		
(q) Breaking rhythm when changing operators, each man	4	
(r) Team member not giving artificial respiration when specified in problem, each man	6	
(s) Not placing pad under shoulders (Sylvester method)	2	

3. Control of bleeding and use of tourniquets: Discount

(a) Not controlling arterial bleeding in required cases	20	____
(b) Not applying digital pressure to temporarily control arterial bleeding	8	____
(c) Unnecessary delay in applying digital pressure	4	____
(d) Ineffective digital pressure (off pressure point, etc.)	4	____
(e) Releasing digital pressure before tourniquet is applied	2	____
(f) Not applying tourniquet in required cases	12	____
(g) Application of tourniquet so as not to stop bleeding	8	____
(h) Not applying tourniquet loosely in compound fractures where arterial bleeding is involved (limbs only)	6	____
(i) Tourniquet applied so as to stop bleeding but at wrong point	4	____
(j) Insecure tourniquet (block not fully under band, not in right position, or stick not anchored, etc.)	2	____
(k) Tourniquet applied so as to injure patient (pinching, not wrapping pad, etc.)	2	____
(l) Binding or covering tourniquet with dressing, each	2	____
(m) Application of tourniquet when not necessary or tightening tourniquet in compound fracture not having arterial bleeding, each	4	____
(n) Not elevating head (severe bleeding of head only)	2	____
(o) Not loosening tourniquet at 10-minute intervals	4	____

4. Physical shock and use of stimulants:

(a) Not rendering any shock treatment in required cases	12	____
(b) Unnecessary delay in starting shock treatment	4	____
(c) Improper position of patient (head too high, etc.)	2	____
(d) Not removing foreign substances from mouth	2	____
(e) Not seeing that tongue is in proper position	2	____
(f) Not loosening tight clothing at neck and waistline, each infraction	2	____
(g) Not covering or improper covering of patient	2	____
(h) Not giving stimulant in required cases	4	____
(i) Giving stimulant to patient having skull fracture, apoplexy, sunstroke, or internal bleeding	6	____
(j) Giving unconscious patient stimulant by mouth, each infraction	4	____
(k) Giving stimulant by nose and not by mouth when patient is conscious, each infraction	2	____
(l) Giving stimulant before bleeding is controlled	2	____
(m) Not testing stimulant when giving by nose or mouth, each infraction	2	____
(n) Not using, using improperly, or not testing heat applications, each infraction	2	____
(o) Applying heated objects or covering patient with blanket in sunstroke, each infraction	6	____
(p) Not rubbing or improper rubbing of extremities	2	____

5. Wounds:

(a) Not applying any dressing for a wound	10	____
(b) Not being aseptic, each infraction even if same wound	6	____
(c) Not using compress or sterile gauze	4	____
(d) Compress improperly applied (wound not entirely covered, wrong location, method, position of knot, etc.), each	2	____
(e) Tight or loose compress	2	____
(f) Insecure, incomplete, or granny knot (compresses only), each	1	____

		Discount	
6.	**Burns or scalds:**		
	(a) Not applying any dressing for a burn or scald	10	____
	(b) Not being aseptic, each infraction even if same burn or scald	6	____
	(c) Not entirely covering burn (picric acid gauze)	4	____
	(d) Not placing picric acid gauze between fingers, toes, back of ears, etc., each omission	4	____
	(e) Not moistening or not indicating that picric acid gauze is moist	2	____
	(f) Applying picric acid gauze too tight, each piece	2	____
7.	**Bruises, strains, and sprains:**		
	(a) Not rendering any treatment for a bruise, strain, or sprain, each infraction	6	____
	(b) Failure to apply cold applications or elevate bruise (when practicable) each infraction	2	____
	(c) Failure to apply hot applications and massage strain, each	2	____
	(d) Failure to bind and elevate sprain (when practicable), each infraction	2	____
8.	**Dislocations:**		
	(a) Not reducing or treating dislocations of lower jaw, fingers, or toes, each	6	____
	(b) Not placing wedge between teeth (dislocated jaw)	2	____
	(c) Not treating dislocations other than (a), each	10	____
	(d) Not placing limb in proper position for treatment	2	____
9.	**Fractures:**		
	(a) Not treating fracture of skull, spine, neck, pelvis, or thigh, each	16	____
	(b) Not treating fractures other than (a), each	10	____
	(c) Not elevating head of patient with fracture of skull	4	____
	(d) Not applying cold application to fracture of skull where there is no open wound	2	____
	(e) Not straightening or improper straightening of fractured limb	2	____
	(f) Not supporting or improperly supporting fractured limb until splints are applied	4	____
	(g) Placing wedge between teeth in fracture of lower jaw	4	____
10.	**Application of splints and padding:**		
	(a) Improper splint (cleats, marks, length, width, etc.)	2	____
	(b) Splint improperly applied (too high, too low, etc.)	4	____
	(c) Use of prepared padding or previously padded splint	4	____
	(d) Improper or insufficient padding (no arch over wound of compound fracture or over tourniquet, etc.), each dressing	4	____
	(e) Failure to place pad under knot in required cases, each infraction	2	____
	(f) Failure to test splint used in dislocated hip and fracture of neck, spine, or pelvis	4	____

		Discount
11.	Application of cravat or triangular bandages:	
	(a) Not using cravat or triangular bandage in required cases (wounds, dislocations, fractures, burns, tying arm of unconscious person for transportation, etc.) or not using enough bandages to complete dressing, each omission.....	4 ____
	(b) Improperly applied cravat or triangular bandage (compress not entirely covered, wrong method, wrong location, wrong position of knot), each infraction.....	2 ____
	(c) Applying bandages in wrong order, each bandage.....	2 ____
	(d) Cravat or triangular bandage too tight or too loose, each.....	2 ____
	(e) Failure to use sling in required cases.....	2 ____
	(f) Wrong type of sling or sling improperly applied.....	1 ____
	(g) Insecure, incomplete, or granny knot (bandages only), each.....	1 ____
12.	Rupture:	
	(a) Not rendering any treatment.....	8 ____
	(b) Improper position of patient (knees not raised and held in place by padding and bandages).....	4 ____
	(c) Failure to apply cold applications.....	2 ____
13.	Poisons, apoplexy, and snakebite:	
	(a) Failure to render any treatment.....	12 ____
	(b) Not applying constricting bandage in snakebite.....	10 ____
	(c) Failure to loosen constricting bandage every 20 minutes.....	2 ____
	(d) Not elevating head of patient having apoplexy.....	4 ____
	(e) Incomplete treatment, each omission.....	2 ____
14.	Fainting, sunstroke, heat exhaustion, frostbites, and freezing:	
	(a) Failure to render any treatment.....	8 ____
	(b) Improper position of patient (head, body, etc.).....	4 ____
	(c) Incomplete treatment, each omission.....	2 ____
15.	Transportation, lifting, and lowering:	
	(a) Not testing stretcher.....	6 ____
	(b) Not loading patient in required cases.....	8 ____
	(c) Loading on stretcher but failing to carry patient.....	4 ____
	(d) Improper construction of improvised stretcher.....	2 ____
	(e) Lifting patient from wrong side (three men on least-injured side).....	2 ____
	(f) Improper lifting or lowering (wrong knee, etc.), each man.....	2 ____
	(g) Improper carrying (wrong step, etc.), each man.....	2 ____
	(h) Not crossing obstacle or loading ambulance in required cases..	2 ____
	(i) Not unloading patient from stretcher in required cases.....	2 ____
	(j) Captain not commanding properly, each infraction.....	2 ____
	(k) Team member not obeying command, each infraction.....	2 ____
	Total.....	500

Total discounts_____ Total credits_____

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