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NATIONAL FIRST-AID AND MINE RESCUE CONTEST KNOXVILLE, TENN., OCTOBER 10, 11, AND 12, 1955

By W. H. Tomlinson

United States Department of the Interior — October 1956

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UNITED STATES DEPARTMENT OF THE INTERIOR
Fred A. Seaton, Secretary
BUREAU OF MINES
Marling J. Ankeny, Director

October 1956

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by

W. H. Tomlinson[1/]

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INTRODUCTION

One of the more important functions of the Federal Bureau of Mines is conservation of the life and health of employees of the mineral and allied industries. Since its very beginning the Bureau has encouraged competition between mine rescue and first-aid teams as a means of stimulating interest in safety and accident-prevention work.

In addition to sponsoring competition on a national and international scale during the past 45 years, the Bureau has also assisted State mining departments, mining companies, and mining organizations in holding State, district, company, and other local meets. This assistance includes providing instructors to train teams, judges, and other contest officials. The Bureau has also furnished problems and outlines for working them, judges' discount sheets (scorecards), contest rules, and problem judges. In fact, Bureau representatives participate in nearly all State, district, and company contests and have had complete charge of some contests.

The 16th National First-Aid and Mine Rescue Contest, with which this publication is mainly concerned, was held in the Administration Building, Chilhowee Park, Knoxville, Tenn., October 10, 11, and 12, 1955. The meet was under the auspices of the Federal Bureau of Mines and the Joseph A. Holmes Safety Association, in cooperation with the National Coal Association, United Mine Workers of America, and various State mining departments. In addition to the National Coal Association and the United Mine Workers, the cooperating agencies that contributed to the success of the meet were the mining departments of Illinois, Kentucky, Ohio, Pennsylvania, Tennessee, and West Virginia, the Lynch Coal Operators Reciprocal Association of Indiana, and the Knoxville (Tenn.) Chamber of Commerce.

SUMMARY

Nine teams from 5 States participated in the 1955 mine rescue contest, and 54 teams from 8 States competed in the first-aid contest. Two teams, one each from Indiana and Ohio, entered the combination event and thus participated in both the mine rescue and first-aid events. The States represented and number of teams from each State are listed in table 1.

Interest in first-aid team training in 1955 appeared about the same as in recent years according to the number of teams participating in this contest compared with the number taking part in the two previous National contests. The number of States attending the 1951 and 1953 national contests was the same (9); however, only 8 States were represented at the 1955 contest.

TABLE 1. - States represented at contest

State	Number of teams		
	Mine rescue	First aid	Combination
Alabama		1	
Kentucky	5	10	
Illinois	1		
Indiana	1	2	1
Ohio	1	4	1
Pennsylvania	1	7	
Tennessee		9	
Virginia		2	
West Virginia		19	
Total	9	54	2

Although the number of first-aid teams actually participating in 1955 was less than in the 2 previous national contests, this was not due to any lack of interest because at least 3 other teams intended to enter the contest but were prevented by circumstances beyond their control.

Apparently interest in sending mine rescue teams to national contests has declined, as the number of teams dropped from 14 in each of the 1951 and 1953 national contests to 9 in 1955. Moreover, 6 States were represented in each of the 2 previous national contests, but only 5 were represented in 1955. Table 2 lists the number of teams, by States, that competed in these contests.

TABLE 2. - Number of teams and States represented in last three National contests

Year	Mine rescue		First aid		Combination	
	Teams	States	Teams	States	Teams	States
1951	14	6	55	9	1	1
1953	14	6	58	9	3	3
1955	9	5	54	8	2	2

As in the past, no limitations were placed on the number of teams entering the contest from any State, district, company, or organization, provided the members thereof were bona fide employees of the mineral or allied industries. Further provisions regarding entry of teams will be found in the general rules covering this contest.

Although the 1955 national competition was open to teams from any mineral or allied industry, only 3 of the 54 first-aid teams that competed were from non-coal mines. All of the non-coal teams were from Tennessee - 1 from a copper mine, and 2 from zinc mines. The remainder of the first-aid teams and all of the mine rescue teams were from coal mines or plants.

As in previous national meets, this contest was conducted in accordance with the general and special rules prepared by the Rules Committee and approved by the General Committee of the National First-Aid and Mine Rescue Contest. Some changes were made in the rules since the last national contest. Most important was the provision of a Chief Judges' Committee. Direction of the mine rescue and first-aid contests was supervised by the chief judges, but in case of any disagreement between the chief judges and any member of a team, judge, or other official of the contest,

the Chief Judges' Committee was responsible for adjudicating the matter. A copy of the General Rules is included in appendix A.

ACKNOWLEDGMENTS

The Bureau acknowledges the valuable assistance given by the chairman and members of the various committees of the National First-Aid and Mine Rescue Contest Committee and representatives of the Bureau of Mines, particularly the chief judges, 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, to publicize the meet, and to insure its smooth operation.

NATIONAL CONTESTS

The first National First-Aid and Mine Rescue Contest sponsored by the Bureau of Mines was held soon after the Bureau was organized in 1910. Several other national contests were held between 1911 and 1930, but none was held between 1930 and 1951. They were reactivated in 1951 and now are being held biennially. Table 3 lists all national contests that have been held.

TABLE 3. - Contests held, 1911-55

Place held	Date	First-aid teams	Mine rescue teams	States represented
Pittsburgh, Pa.	October 1911	41	4	10
Terre Haute, Ind.	September 1914	29	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	1/17
Salt Lake City, Utah	August 1923	55	21	2/13
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
Pittsburgh, Pa.	October 1950	16	0	3/ 4
Columbus, Ohio	October 1951	55	14	10
Fort Wayne, Ind.	Sept.-Oct. 1953	47	14	9
Knoxville, Tenn.	October 1955	54	9	9

1/ Includes Canada.
2/ Includes Mexico.
3/ This might be described as a 4-State contest, held to stimulate interest in reviving national meets.

REGISTRATION

One of the important prerequisites for efficient operation of any contest, particularly of the magnitude of a national meet, is a well-organized and smooth-running system of registering the teams, judges, and other contest officials who are to participate.

Contest headquarters for this meet were set up at the Andrew Johnson Hotel at Knoxville. Rescue teams were required to register at the hotel between 1:00 p.m. and 10:00 p.m., October 9, 1955. They were also permitted to register from 7:00 a.m. to 7:45 a.m. the following morning at the Administration Building, Chilhowee Park. First-aid teams were required to register at the hotel between 10:00 a.m. and 10:00 p.m., October 10, and from 8:00 a.m. to 9:45 a.m., October 11. Although the rules provided for the registering of judges and other contest officials between 1:00 p.m. and 10:00 p.m., October 9, they were permitted to register at any time the booths were open.

A list of the registrars for this contest, all of whom were representatives of the Bureau of Mines, is given in appendix D.

MINE RESCUE CONTEST

Because the ground floor of the Administration Building, Chilhowee Park, was the only available place at Knoxville that could accommodate both the mine rescue and first-aid contests, it was necessary that both events be held in the same space; and, since the time between the completion of the mine rescue event and the start of the first-aid event was limited, deviation from former procedure was required. In previous national contests it usually was possible to hold the two events at different locations, giving ample time following the rescue event for laying out the floor for the first-aid contest; but, since this was not possible, the work of removing the "mine" and laying out the floor for the first-aid event had to be closely coordinated.

The layout of the simulated mine for the rescue problem was an innovation compared with past practice in rescue contests. Instead of only 1 mine, 2 identical mines were provided, permitting 2 teams to work simultaneously. This materially assisted in speeding the rescue event, completion of which allowed ample time for preparation for the first-aid contest.

The mine rescue contest began at 8:00 a.m. October 10. Before entering the mine, the team members were given a preliminary examination and required to check their apparatus. The preliminary examination consisted of 10 questions put to each member of the teams, including the captains. The questions, to be marked "right" or "wrong," were to be answered in 10 minutes. Sample copies of these questions are included in appendix B.

Actual working of the problem began at 9:00 a.m. The use of two mines resulted in completion of the mine rescue contest by approximately 4:00 p.m. October 10. This is contrasted with the experience in the 1953 national contest in which the rescue team that worked the problem last did not complete it until early the following morning.

The design of the galleries conformed with the layout of the ground floor where the contest was held. Entrance to the mines was in the center of the building, directly inside the main entrance. One mine, called the "right workings," extended to the right of the entrance; the other, called the "left workings," was projected to the left. A partition approximately 8 feet in height separated the 2 mines. Apparatus were given preliminary examination and checking on the balcony, and teams waiting their turn to work the problem were isolated there until their turn to enter the mine. Canvas curtain was strung along the balcony to prevent the teams that had not yet worked the problem from observing other teams at work in the mine.

The main entries of the mine were approximately 152 feet long and 12 feet wide. Crosscuts 12 feet in width connected the main entries, the first of which was marked "caved completely," therefore inaccessible. A "key" opening turned off the second entry, providing access to several rooms. Coal was hauled by shuttle car from the face workings to a belt conveyor on the inby main entry. A loading machine and a shuttle car were placed at the face of a dead-end room, and another shuttle car was at the entrance to this room. A mining machine and a drill were near the face of another room at the opposite extreme end of the key opening. The bodies of three workmen were behind a barricade in the farthest inby room, and a live man was behind a barricade at the face of the inby (second) entry. Gas-testing boxes were placed at strategic points throughout the workings to determine the kind and amount of gas, if any, present.

The problem was as follows:

Mine Rescue Team Problem

Working time, 30 minutes

> When the day shift crew arrived at the No. 1 mine, Southern Coal Co., Knoxville, Tenn., it found debris scattered on the surface. A preliminary examination indicated that an explosion had occurred underground, and the supply crew of four (4) men had not checked out of the mine. Explore the underground workings and locate the four (4) men or their bodies. Any live men found should be brought to the surface.

The details of the mine or gallery and problem are shown on the key map of the mine, figures 1 and 2.

The arrangement of the machinery and equipment, the placing of bodies and the live man, the presence of barricades, and the various kinds of gases simulated actual conditions usually found after a mine explosion.

The problem of the teams was to enter the mine from the main entry or fresh-air base, protected by self-contained oxygen breathing apparatus, and to: (a) Explore all accessible openings; (b) discover and report the location and condition of all machinery, tools, equipment, openings, and passageways; (c) discover and report all gases with respect to kind and amount; (d) locate all falls of roof, if any, barricades, and bodies; (e) determine the location and extent of fires, if any, and observe and record any and all data and information that might assist in determining the cause of the explosion; and (f) rescue any men found alive. The critical part of this problem was the rescue of a workman found alive behind a barricade at the face of the second or inby entry. This man had to be transported from the barricaded area to the surface through an irrespirable atmosphere.

At the time of registering, mine rescue team captains drew lots to determine the order in which their teams were to work the problem. Before entering the mine each team familiarized itself with the problem, a copy of which was made available upon its turn to work. Upon entering the mine, the teams were given a copy of the mine map; those exploring the workings on the right side were given a copy of the "right workings" (fig. 1), and those exploring the other side got a copy of the "left workings" (fig. 2), upon which they marked their findings during their investigations.

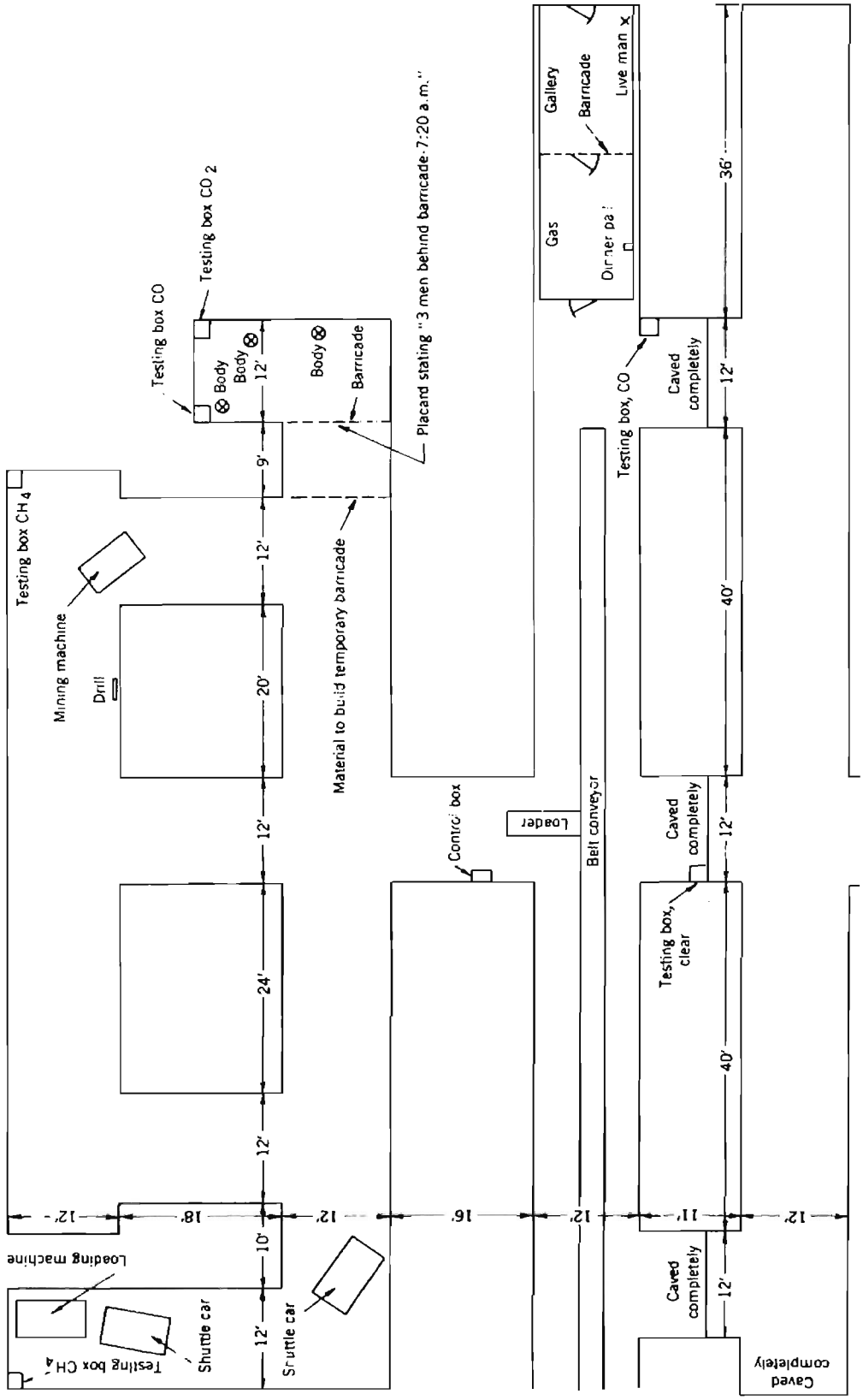

Figure 1. - Key map; "right workings" of mine used in mine rescue problem.

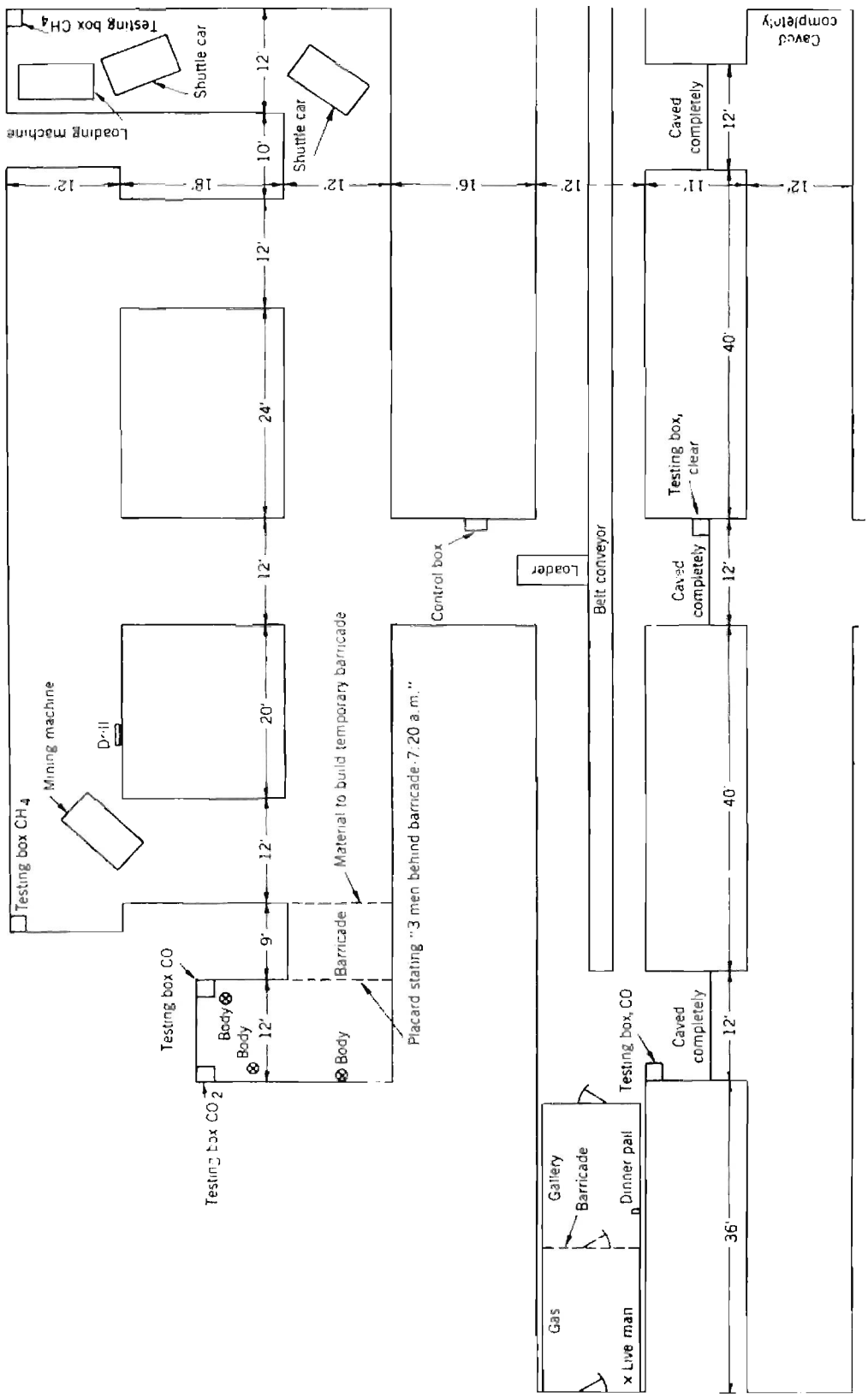

Figure 2. - Key map; "left workings" of mine used in mine rescue problem.

The method of judging or rating the teams was similar to that used in previous national contests which was in accordance with the following:

a. Preliminary examination.
b. Checking and other procedure before entering mine.
c. Procedure after entering mine and beyond fresh-air base.
d. Procedure after working problem and leaving mine.

The judges were selected on the basis of their familiarity with mine rescue procedures. In this instance, they were all representatives of the Bureau of Mines and the various State mining departments. A predetermined number of points was discounted for wrong answers to preliminary questions, for improper checking of apparatus, for each failure to perform standard procedures during rescue and recovery work, and for improper marking of the mine map. The judges used standard discount sheets or scorecards in making these ratings. The team having the smallest number of discounts was declared the winner of the mine rescue contest. The team having the next smallest number of discounts was given second place, and so forth. Sample copies of the judges' discount sheets are shown in appendix C. The preliminary examination question form is also the "A" judges' discount card.

To enable all teams to be trained alike as far as possible 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 to each team in advance of the meet. A copy of these rules is shown in appendix C.

A list of the participating teams, their sponsors, and the final standing of the teams is shown in the following table.

TABLE 4. - Final standing of teams in mine rescue contest

Place	Team No.	Mine or team	Captain	Company	Address	Total discounts
1	3	Hendrix mine	Douglas Damron	Consolidated Coal Co. (Ky.)	Jenkins, Ky.	21
2	7	Price mine	J. P. Gibson	Inland Steel Co.	Wheelwright, Ky.	31
3	5	Wisconsin Steel mine No. 2	R. P. Hightower	International Harvester Co.	Benham, Ky.	32
4	8	Mine No. 10	Fred Rice	Peabody Coal Co.	Pawnee, Ill.	36
5	4	Nos. 31 - 32 mines	Ted Hollin	United States Steel Corp.	Lynch, Ky.	41
6	9	Frick District mines	Pete Yadamec	do.	Uniontown, Pa.	53
7	6	Uniontown mine	Charles Hatfield	Nashville Coal Co., Inc.	Uniontown, Ky.	54
8	2	Green Valley mine	Arthur Bedwell	Snow Hill Coal Corp.	Terre Haute, Ind.	91
9	1	Glen Castle No. 6 mine	John Douglas	Hanna Coal Co.	Adena, Ohio	136

First place in the mine rescue contest was won by the Hendrix mine team of the Consolidation Coal Co. (Ky.), Jenkins, Ky., with 21 discounts out of a possible total of 268 demerits; second place was won by the Price mine team of the Inland Steel Co., Wheelwright, Ky., with 31 discounts; third place went to the Wisconsin Steel mine No. 2 of the International Harvester Co., Benham, Ky., with 32 discounts.

It is interesting to note that only 10 points separated the first- and second-place winners, and there was a spread of only 11 points between the winners of first and third places. The first-place winner in this contest (Hendrix-mine team) won second place in the 1953 national mine rescue contest with a score of only 23 discounts; the champion team in the former contest had only 1 point less.

A list of the officials and judges of the mine rescue contest appears in appendix D.

FIRST-AID CONTEST

The first-aid contest was officially opened with an invocation by a local clergyman and the singing of the National Anthem. The mayor of Knoxville gave the address of welcome, and the response was made by the director of the contest.

This contest was held in the same building as the mine rescue event. The position of the teams on the field was determined by lot at the time of registering. Space was provided for 55 teams, but since only 54 teams participated and No. 35 floor space was not drawn, this space was left vacant. The contest began at 10:00 a.m., October 11, and at 9:00 a.m., October 12. The last problem was completed at approximately 3:00 p.m. of the second day.

It is the practice at national contests to work only 10 regular problems during the 2-day period unless 2 or more teams are tied for any place (rank or standing) for which prizes are provided. Since teams numbered 19 and 28 tied for 8th place, teams 25 and 40 tied for 10th place, and teams 16 and 20 tied for 15th place, and since prizes were awarded to the 15th place in this contest, it was necessary to work an extra problem to resolve these ties. In such instances the team having the final highest score is given the higher rank of the two, and the loser is given the lower rank. There were several other ties; however, they affected rankings lower than those for which prizes were provided, and therefore no effort was made to break them by working extra problems. Sometimes ties are broken by lot rather than by working a "tie" problem.

Actually, 12 problems were worked in this event, but only 11 (ten regular and the tie) were considered in determining the scores of the teams. Problem No. 2 was ruled out because of an error. The discrepancy was not discovered until well after the teams had started to work it but to avoid confusion and misunderstanding, all teams were permitted to complete the problem, which ultimately was disregarded.

Following the practice in previous national contests, first-aid practice problems were prepared and sent in advance to teams that indicated their intention of participating in the contest. Copies of the problems worked at the 1955 contest appear in appendix E. References to page and figure numbers are to Bureau of Mines First-Aid Manual, 1953 edition.

As in the mine rescue event, specific rules governed the first-aid contest. Copies of these rules appear in appendix F.

Of the 54 teams in the first-aid contest, 51 were sponsored by coal companies or organizations affiliated with the coal-mining industry. Approximately one-fourth of the teams were cosponsored by either coal companies and coal-mining institutes or companies and local unions of the United Mine Workers of America.

A list of the teams, their positions on the field (team number), the companies and/or organizations represented, the names or numbers of the mines or plants, the addresses, and the standing of all teams at the completion of the contest, with the percentage score of each team, is shown in table 5.

Figure 3. - Examining map before entering mine.

Figure 4. - Preparing apparatus and equipment before entering mine.

Figure 5. - Testing for explosive or irrespirable gas.

Figure 6. - Testing for explosive, irrespirable, or poisonous gas.

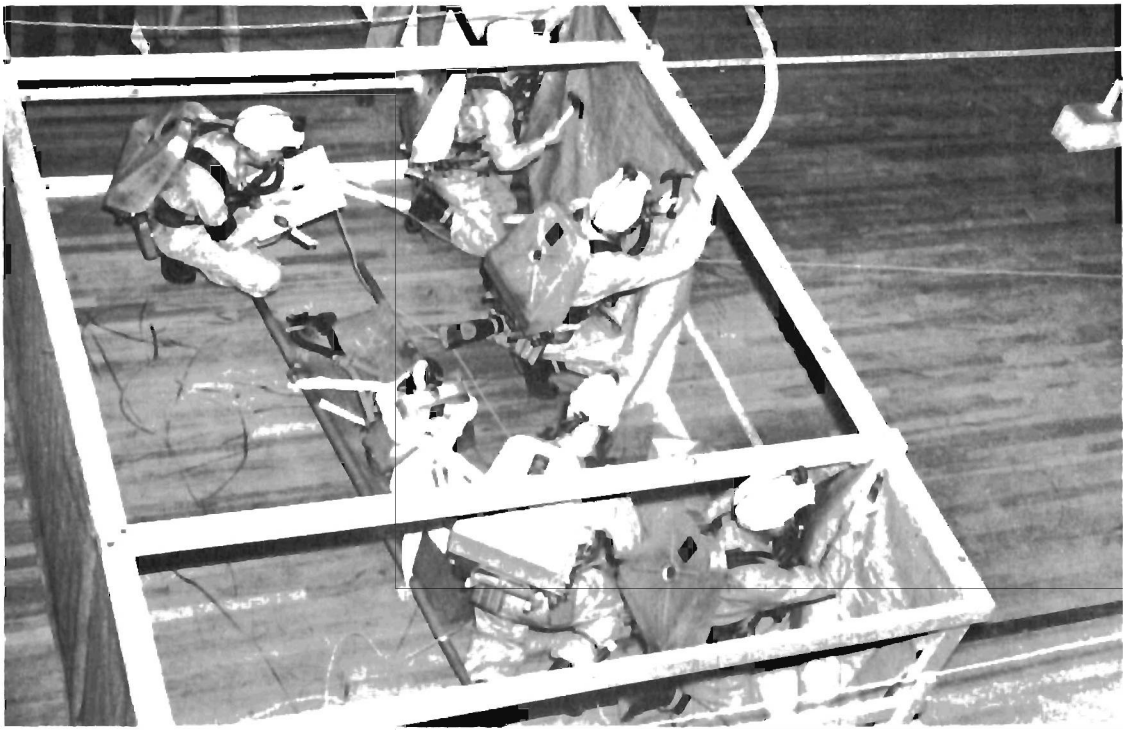

Figure 7. - Erecting temporary stopping.

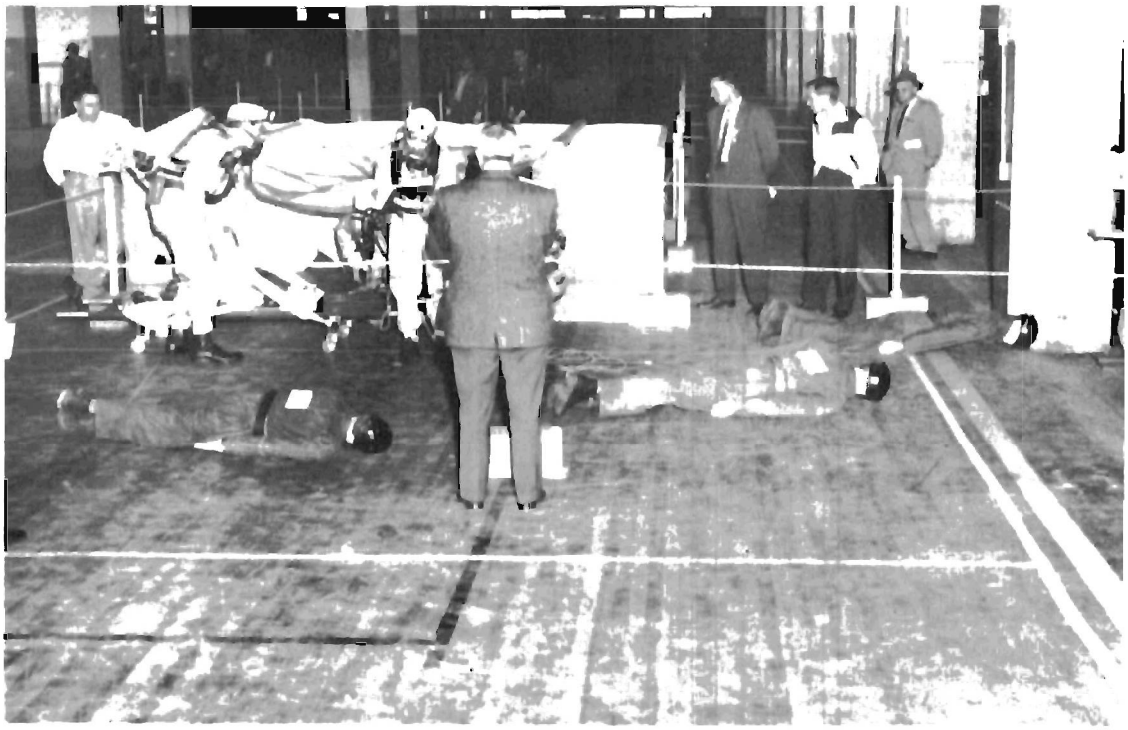

Figure 8. - Marking location of bodies on mine map.

Figure 9. - Rescuing live man.

TABLE 5. - Final standing of teams in first-aid contest

Place	Team No.	Mine or Team	Captain	Company	Address	Score, percent
1	10	Gary District (team No. 1)	John Dickenson	U. S. Steel Corp.	Gary, W. Va.	99.74
2	53	Palmer mine	J. Ray St. Clair	do.	Uniontown, Pa.	99.58
3	18	Gary District (team No. 2)	Robert Long	do.	Gary, W. Va.	99.46
4	11	Georgetown No. 12 mine	William DeLucas	Hanna Coal Co.	Adena, Ohio	99.42
5	15	Mathies mine	Joseph Hebda	Mathies Coal Co.	Finleyville, Pa.	99.30
6	26	Piney Fork No. 1 mine	Andrew Janosky	Hanna Coal Co.	Piney Fork, Ohio	99.28
7	36	Jamison No. 11 mine	John McCulloch	South Union Coal Co.	Edna, W. Va.	99.08
8	19	Jensie mine	Howard Shepherd	Warner Collieries Co.	E. Springfield, Ohio	98.96+
9	28	No. 1 Div., No. 1 team	Dale See	Compass Coal Co.	Philippi, W. Va.	98.96-
10	25	Renton mine	George Truax	Renton Coal Co.	Renton, Pa.	98.88
11	40	No. 1 mine	Walter Williamson	Blue Diamond Coal Co.	Blue Diamond, Ky.	98.88-
12	24	Cons. No. 32 (team No. 1)	Lowell H. Kelly	Consolidation Coal Co.	Owings, W. Va.	98.86
13	50	Keystone mine	Ernest Moore	Eastern Gas & Fuel Associates	Keystone, W. Va.	98.82
14	7	Cons. No. 32 (team No. 2)	Lewis Akers	Consolidation Coal Co.	Owings, W. Va.	98.80
15	20	Liberty mine	E. F. Robinson	Turner Elkhorn Mining Co.	Drift, Ky.	98.74+
16	16	Dawson mine	Raymond Newbrough	Barnes-Dawson Coal Co.	Clarksburg, W. Va.	98.74-
17-18 (tie).	43	Sonman mine	Frank Frytak	Eastern Gas & Fuel Associates	Portage, Pa.	98.72
17-18 (tie).	51	Bergoo No. 4 mine	George Bonovich	Pardee & Curtin Lumber Co.	Webster Springs, W. Va.	98.72
19	3	Imperial No. 2 mine	John Newhouse	Imperial Smokeless Coal Co.	Quinwood, W. Va.	98.72-
20	9	Hendrix mine	Woodrow Webb	Consolidation Coal Co. (Ky.)	Jenkins, Ky.	98.68
21	31	Glen Castle No. 6 mine	John Douglas	Hanna Coal Co.	Adena, Ohio	98.66+
22	44	Imperial Cardiff No. 1	Lester Kimmel	Imperial Coal Corp.	Nettleton, Pa.	98.66-
23	39	Montcoal mine	Elvin Miller	Armco Steel Corp.	Montcoal, W. Va.	98.58+
24	1	Price No. 1 mine	Luther Hall	Inland Steel Co.	Wheelwright, Ky.	98.58-
25	14	Bartley No. 1 mine	Cecil Ball	Island Creek Coal Co.	Bartley, W. Va.	98.50+
26	8	Wyoming mine	Fred Thomas	Red Jacket Coal Corp.	Wyoming, W. Va.	98.50-
27	27	New Daylight mine	James Thorp	Dawson Daylight Coal Co.	Dawson Springs, Ky.	98.24
28	46	Cons. No. 63 mine	Nicholas Eates	Consolidation Coal Co.	Monongah, W. Va.	98.20
29	37	Montour No. 10 mine	Andrew Hostovich	Pittsburgh Coal Co.	Library, Pa.	98.14+
30	21	Wharton No. 2 mine	W. Loudermilk, Jr.	Eastern Gas & Fuel Associates	Barrett, W. Va.	98.14-
31	45	Bunker mine (team No. 2)	Ralph Strakel	Trotter Coal Co.	Morgantown, W. Va.	98.06
32	2	No. 214 mine (team No. 1)	Warnie Flint, Jr.	Consolidation Coal Co. (Ky.)	Jenkins, Ky.	98.04
33	22	No. 204 mine	Clyde Cummings	do.	do.	98.02
34	54	Derby Colliery	F. E. Turner, Jr.	Stonega Coke & Coal Co.	Big Stone Gap, Va.	97.88
35	49	Itmann mine	Carl Parks	Pocahontas Fuel Co.	Itmann, W. Va.	97.72
36	30	No. 214 mine (team No. 2)	Roy Gray	Consolidation Coal Co. (Ky.)	Jenkins, Ky.	97.68
37	34	Robena mine	John Chambers	U. S. Steel Corp.	Uniontown, Pa.	97.64+
38	41	Enoco mine	R. D. Bennett	Enoco Collieries, Inc.	Bruceville, Ind.	97.64-
39	52	Leatherwood No. 2 mine	Kenneth Williamson	Blue Diamond Coal Co.	Tilford, Ky.	97.58
40	12	Shamrock mine	Raymond Carroll	Truax-Traer Coal Co.	Kayford, W. Va.	97.52
41	17	Mines and Surface	Olen Bell	Tennessee Copper Co.	Copperhill, Tenn.	97.42
42	33	Reels Cove mine	Clark Grayson	Tenn. Prod. & Chem. Corp.	Whitwell, Tenn.	97.24
43	13	Mascot mine (team No. 1)	John B. Melon	American Zinc Co.	Mascot, Tenn.	97.22
44	55	Roda Colliery	Gilmer Pippin	Stonega Coke & Coal Co.	Big Stone Gap, Va.	97.14
45	48	Eagan mine	Dave E. Osborne	Blue Diamond Coal Co.	Eagan, Tenn.	97.12
46	23	Black Star mine	Paul Helton	Black Star Coal Corp.	Alva, Ky.	97.10
47	5	Mascot mine (team No. 2)	James Bungarner	American Zinc Co.	Mascot, Tenn.	96.96
48	6	Green Valley mine	Arthur Bedwell	Snow Hill Coal Corp.	Terre Haute, Ind.	96.66
49	38	Team No. 1	John Wise	Brushy Mountain Coal Co.	Petros, Tenn.	96.56
50	4	Team No. 2	John Shaw	do.	do.	96.14
51	42	Palmer-Pocket mine	Earl Nunley	Tennessee Cons. Coal Co.	Whitwell, Tenn.	96.06
52	47	Southern Coll. mine	George Andrews	Southern Collieries, Inc.	Lake City, Tenn.	95.82
53	29	Mine No. 5	John Cotton	Truax-Traer Coal Co.	Kayford, W. Va.	95.53
54	32	Sayreton mine	Willie Weston	Republic Steel Corp.	Sayreton, Ala.	95.48

First, second, and third places in the first-aid contest were won by teams sponsored by the United States Steel Corp. The team winning first place was the Gary District team No. 1, Gary, W. Va., with a remarkably high score of 99.74 percent. Second place went to the team from the Palmer mine, Uniontown, Pa., with a score of 99.58 percent. The Gary District team No. 2, Gary, W. Va., won third place with a score of 99.46 percent. It is interesting to note that there was a spread of only 8 points between the 1st and 2d place winners and 14 points (of a total of 500) between 1st and 3d place winners. Moreover, there was less than 1 percent difference in the scores between the 1st place winner and the team winning 10th place.

A statement in the report on the 1951 national contest[1/] shows that the average scores attained in that contest were higher than those of any previous national contest, indicating that first-aid teams were becoming more efficient. Since the average scores of the top-ranking teams in the 1955 contest are relatively better than those of the other contest mentioned, it would appear that first-aid team training is continuing to advance in proficiency.

Table 6 shows the relative standing of the 6 top-ranking teams in the last 3 National meets.

TABLE 6. - Scores of top 6 first-aid teams in last 3 national contests

Year	Score - first to sixth places					
	1st	2nd	3rd	4th	5th	6th
1951	99.68	99.54	99.34	99.34	99.24	99.22
1953	98.36	98.22	98.10	97.98	97.94	97.92
1955	99.74	99.58	99.46	99.42	99.30	99.28

Perusal of table 6 shows that the top 6 teams in the 1955 contest have the alltime high scores for national contests.

Since many first-aid teams that enter national contests have become so proficient, it is necessary that judging be accurate to insure that the best teams are declared the winners. In the 1951 national contest only Bureau of Mines representatives were permitted to act as judges, and all who served in this capacity were given special training in judging immediately before the contest. The rules were changed in the 1953 contest permitting representatives of the various State mining departments or other qualified persons holding Bureau of Mines first-aid judges' certificates to officiate as judges. The same rule applied in the 1955 contest.

Two judges were assigned to each team. When possible, one judge represented the Bureau; the other, a State. When State or other qualified judges were not available, two Bureau men were assigned to a team. To make the judging as fair as possible, the judges were rotated following each problem. The number of spaces each set of two judges moved was determined by lot, and the number differed following each problem. Supervising judges representing both the Bureau and the States were assigned to a group of several teams. Like the individual team judges, they also moved to the next group after each problem. A sample of the first-aid judges' discount sheet is included as appendix G.

1/ Tomlinson, W. H., National First-Aid and Mine Rescue Contest, Columbus, Ohio, October 2, 3, and 4, 1951: Bureau of Mines Inf. Circ. 7658, 1953.

The smooth functioning of any large first-aid contest is affected greatly by the method of distributing the problems and scorecards to the teams and in delivering the judges' scorecards to the recorders. The method used in this contest was similar to that followed in earlier national contests, in which the assistants to the person in charge of the problems distributed them to the team judges, who, at the sound of the first gong, handed them to the team captains. These men also returned the scorecards to the chief distributor. As the scorecards were returned, the chief problem distributor checked them off the list, then forwarded them to the recorders. The contest functioned smoothly and was evidently conducted to the satisfaction of all concerned.

A list of those officiating at the first-aid contest is shown in appendix D.

COMBINATION CONTEST

The combination event consists of teams that have participated in both the mine rescue and first-aid contests. To compete in this event the same team that participates in the first-aid contest, exclusive of the patient, must constitute the mine rescue team.

Only 1 team participated in the combination event in the 1951 national contest; 3 teams entered this event in 1953, and 2 participated in 1955.

Table 7 lists the teams, the companies represented, addresses of the teams, number of discounts received, and the standing of the teams in the combination contest.

TABLE 7. - Standing of teams in combination contest

Place	Mine or team	Company	Address	No. discounts	
				First-aid	Mine Rescue
1	Glencastle No. 6	Hanna Coal Co.	Adena, Ohio	67	136
2	Green Valley	Snow Hill Coal Corp.	Terre Haute, Ind.	167	91

BANQUET AND AWARDING OF PRIZES

Following the contest a banquet was held at the University Center, University of Tennessee, Knoxville, beginning at 6:30 p.m., October 12. Approximately 620 team members, officials, judges, and guests attended. After the banquet prizes were presented the winning teams in the first 6 places in the mine rescue contest, and the first 15 places in the first-aid contest. Trophies were available for first through third place in the combination event; however, as only 2 teams participated; each received an award.

The names of the winners of each event, the prizes awarded, and the donors of the prizes, are listed in appendix H.

STATE CHAMPIONS

The standing of the teams in the first-aid and mine rescue events were used as a basis for selecting the State champions. The team from each State having the best score was declared the winner in its respective State. Four States awarded banners to their winners, and one gave a trophy donated by the Coal Operators Association. Alabama and Tennessee gave banners to their winners in the first-aid contest only.

Figure 10. - Teams, judges and officials at attention, first-aid contest.

Figure 11. - Team reading problem.

Figure 12. - Supporting fracture during artificial respiration.

Figure 13. - Treatment for bleeding, wounds, and support of fracture.

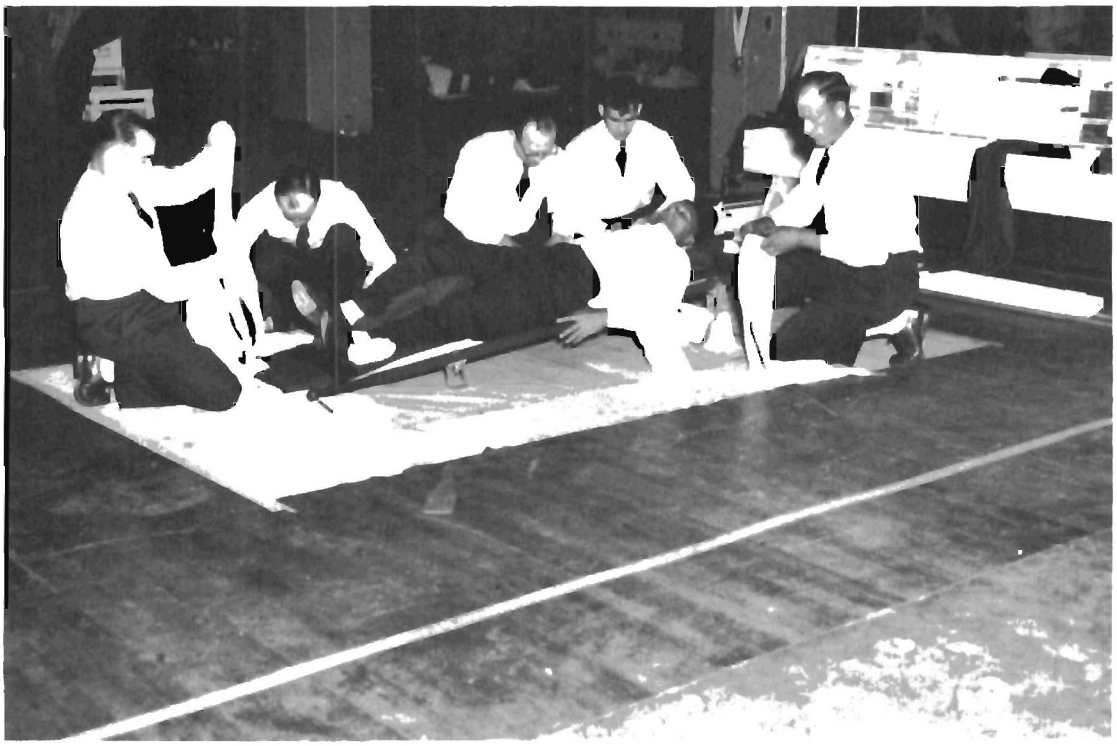

Figure 14. - Dressing for dislocation of hip.

Figure 15. - Lifting patient on stretcher.

Figure 16. - Judge examining patient.

Kentucky banners were awarded to its winners in both mine rescue and first-aid events, and since no first-aid team from Illinois entered the contest, the Illinois banner went to its winning mine rescue team. Virginia gave a trophy.

Tables 8 and 9 list the State champions in both contests.

TABLE 8. - State champions - mine rescue

State	Team position	Company	Mine	Address
Illinois	8	Peabody Coal Co.	No. 10	Pawnee
Indiana	2	Snow Hill Coal Corp.	Green Valley	Terre Haute
Kentucky	3	Consolidation Coal Co.	Hendrix	Jenkins
Ohio	1	Hanna Coal Co.	Glen Castle No. 6	Adena
Pennsylvania	9	United States Steel Corp.	Frick District	Uniontown

TABLE 9. - State champions - first aid

State	Team position	Company	Mine	Address
Alabama	32	Republic Steel Corp.	Sayreton	Sayreton
Indiana	41	Enoco Collieries	Enoco	Bruceville
Kentucky	40	Blue Diamond Coal Co.	Blue Diamond No. 1	Blue Diamond
Ohio	11	Hanna Coal Co.	Georgetown No. 2	Adena
Pennsylvania	53	United States Steel Corp.	Palmer	Uniontown
Tennessee	17	Tennessee Copper Co.	Mines and Surface	Copperhill
Virginia	54	Stonega Coke and Coal Co.	Derby Colliery	Big Stone Gap
West Virginia	10	United States Steel Corp.	Gary District No. 1	Gary

Kentucky, Ohio, Pennsylvania, Tennessee, and West Virginia customarily hold annual Statewide first-aid contests. Kentucky also conducts an annual mine rescue contest; however, in 1955 Kentucky and West Virginia used the standing of their teams in the national contest to determine their State winners.

In addition to the prizes awarded at the national contest, the Kentucky State winners were also awarded other trophies at later meetings. Engraved plaques donated by the Kentucky Mining Institute and trophies given by the Kentucky River Coal Corp. were presented the winning mine rescue and first-aid teams at the November 1955 meeting of the Kentucky (State) Mining Institute. Individual trophies for the champion Kentucky mine rescue team, donated by the Kentucky Post No. 2, National Mine Rescue Association, were awarded at the February 1956 annual meeting of the association.

COST OF NATIONAL CONTEST - METHOD OF FINANCING

An accurate record of the cost of the national contest is not possible because much of the work in connection with making prior arrangements and for conducting it was done by representatives of various organizations without cost to the National Committee. In the 1951 contest the banquet was sponsored by the National Committee and financed by contest funds. At the 1953 contest tickets were sold to cover the cost of the dinner and the remaining nominal cost was borne by the National Committee. Similar procedure was followed with the 1955 contest, wherein the difference ($239.78) between the total cost of the banquet ($3,525.78) and the amount received from the sale of tickets ($3,286.00) was covered by contest funds.

The amount necessary to cover the actual expenses of the contest was raised by popular subscription from coal associations, mining institutes, mining companies, labor organizations, and others. The lumber and other materials and equipment used in the mine rescue problem were paid for largely by the National Committee; however, some of the materials and equipment were donated by commercial companies. Bureau of Mines personnel erected the gallery and laid out the simulated mine workings.

Contributions to the contest fund totaled $4,980.25. Disbursements totaled $3,083.81 leaving a balance of $1,896.44, which, in keeping with established practice, is to be returned to the contributors on a pro rata basis.

A list of the donors follows:

Contributors of funds

Big Sandy-Elkhorn Coal Mining Institute	Pikeville, Ky.
Central Pennsylvania Coal Producers Association	Altoona, Pa.
Cumberland Valley Mining Institute	Middlesboro, Ky.
Harlan Mining Institute	Harlan, Ky.
Illinois Coal Operators Association	Springfield, Ill.
Indiana Coal Mine Rescue Station	Terre Haute, Ind.
Indiana Coal Operators Association	Do.
Indiana Coal Producers Association	Do.
Inland Steel Co.	Chicago, Ill.
Jones and Laughlin Steel Corp.	Pittsburgh, Pa.
Kanawha Coal Operators Association	Charleston, W. Va.
Kentucky River Mining Institute	Hazard, Ky.
Logan Coal Operators Association	Logan, W. Va.
Lynch Coal Operators Reciprocal Association	Terre Haute, Ind.
National Coal Association	Washington, D. C.
Northern West Virginia Coal Association	Fairmont, W. Va.
Ohio Coal Association	Cleveland, Ohio
Operators Association of Williamson Field	Williamson, W. Va.
Pocahontas Operators Association	Bluefield, W. Va.
Pond Creek - Tug River Coal Mining Institute	Williamson, W. Va.
Republic Steel Corp.	Cleveland, Ohio
United Mine Workers of America	Washington, D. C.
United States Steel Corp.	Pittsburgh, Pa.
Virginia Coal Operators Association	Norton, Va.
Weirton Steel Corp.	Weirton, W. Va.
Western Kentucky Mining Institute	Madisonville, Ky.
Western Pennsylvania Coal Operators Association	Pittsburgh, Pa.
Winding Gulf Coal Operators Association	Beckley, W. Va.

Contributors of equipment

The following companies loaned or donated equipment for use in the mine rescue contest:

The Cherry Street Block Co. of Knoxville, Tenn., made available without cost, except for breakage and transportation to and from Chilhowee Park, 275 concrete building blocks used in making the mine for the rescue problem.

The Johnston-Morehouse-Dickey Co. of Pittsburgh, Pa., donated two rolls of brattice cloth for the same purpose.

Disbursements

The disbursements in connection with both the mine rescue and first-aid contests are listed in table 10.

TABLE 10. - Disbursements

Item or service	Amount	Paid to
Advance preparation	$ 45.80	Homan, Harry S.
Badge inserts	15.00	Bunting Stamp Co.
Banquet tickets	12.24	Cornelius Printing Co.
Banquet (less dinners paid)	239.78	University Food Center
Blocks	28.17	Cherry Street Block Co.
Brattice cloth	75.00	Norton Hardware Co.
Candles	4.00	Norton Pharmacy
Do.	7.20	Passmore's Pharmacy
Carbon monoxide	46.90	The Matheson Co.
Contest headquarters	106.78	Andrew Johnson Hotel
Do.	55.55	W. H. Tomlinson
Corrugated board	31.06	Alling and Cory Co.
Decorating	200.00	East Tennessee Display Service
Expenses, miscellaneous	39.40	Prize Committee
Janitor service	110.26	Knoxville Public Welfare
Kraft sheets	25.50	Kress Box Co.
Labor and cleaning	12.00	N. M. Tipton
Lumber	24.64	Frazee Lumber Co.
Do.	16.48	Todd Lumber Co.
Do.	164.55	West Elizabeth Lumber Co.
Mannequin	10.00	Clement Display Co.
Medals	620.75	Berthold Nebel
Phone at contest headquarters	3.53	Warncke, R. G.
Plastics	67.50	Sears, Roebuck & Co.
Printing checks	3.78	
Programs and banquet menus	720.22	Graphic Arts Press
Public address system	25.00	Harvey Hammond
Publicity	50.00	Richard Mason
Rope	25.22	John Flocker & Co.
Secretarial services	30.00	Carol Tennant
Shipment of programs from Washington	8.30	
Signs	165.00	H. H. Selferth
Sponge rubber	3.75	Miami Rubber Co.
Stopwatch	18.00	Fisher Scientific Co.
Supplies, miscellaneous	62.10	I. DeBroff Hardware
Vase	10.25	Baums, Inc.
Total	$3,083.81	

STATES AND ORGANIZATIONS REPRESENTED AT CONTEST

States and organizations officially represented at the National contest are listed in appendix I.

NATIONAL FIRST-AID AND MINE RESCUE CONTEST COMMITTEE

The 1955 contest was arranged and conducted by the National First-Aid and Mine Rescue Contest Committee, an organization established solely for this purpose. The committee was composed of representatives of the Bureau of Mines, the National Coal Association, State and local coal operators' associations, the national, district, and local offices of the United Mine Workers of America, State, district, and local mining institutes, State departments of mines, insurance companies, coal companies, and others.

Various special or specific committees, with a chairman in charge of each group, were appointed to handle the numerous , necessary functions. Committees took charge of arranging, financing, and conducting the contest; their work was coordinated by the general chairman and director of the contest, his assistants and advisors. The acting secretary of the contest kept the participating teams, the companies and organizations that sponsored the teams, and members of the various committees fully informed regarding all matters pertaining to the contest.

The smooth functioning of all the committees was a big factor in making the contest an outstanding success.

A list of the official members of the National Committee is given in appendix J.

APPENDIX A: GENERAL RULES FOR CONDUCTING THE 1955 NATIONAL FIRST-AID AND MINE RESCUE CONTEST

1. The first-aid and mine rescue contests will be held in the Administration Building at Chilhowee Park, Knoxville, Tenn., October 10, 11, and 12, 1955.

2. There will be no limitations as to the number of teams admitted to this contest from any 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 H. F. Weaver, secretary, 1955 National First-Aid and Mine Rescue Contest, United States Bureau of Mines, Room 4522, Interior Building, Washington 25, D. C., on or before September 30, 1955. Entries will not be received after September 30, 1955, except that in cases where participation in the National Contest is determined through elimination processes in district, State, or other contests held on or after September 30, 1955. Teams from these contests will be permitted to enter the National Contest subsequent to September 30, 1955. Provided further, that no notice of entry of any teams will be accepted after 12 o'clock noon, Sunday, October 9, 1955. Entry blanks may be obtained by application to the nearest Bureau of Mines Health and Safety Office.

7. The same team may enter the mine rescue and first-aid contests, provided that the same team members who participate in the first-aid contests, exclusive of the patient, must constitute the mine rescue team to qualify for combination prizes.

8. Each team entering for the mine rescue contest and each team entering for the first-aid contest will draw a number to determine its order of performance and field location.

9. Registration of first-aid and mine rescue teams, judges, and contest officials will be at the Andrew Johnson Hotel, Knoxville, Tennessee, between 1:00 p.m. and 10:00 p.m., October 9, 1955. Registration for mine rescue teams will be continued at the Administration Building, Chilhowee Park, between 7:00 a.m. and 7:45 a.m. on October 10, 1955. Registration for first-aid teams will be continued at the Andrew Johnson Hotel between 10:00 a.m. and 10:00 p.m. on October 10 and between 8:00 a.m. and 9:45 a.m. on October 11.

10. 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 of a mine rescue team has had a thorough physical examination by a qualified physician not more than 30 days before the contest and is physically sound and capable of performing strenous work

under oxygen. Physician's Examination Form (Bureau of Mines Form 6-141) may be obtained from the nearest Bureau of Mines Health and Safety Office.

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

12. The preliminary examination and testing of rescue crews and apparatus will commence at the Administration Building, Chilhowee Park, Knoxville, Tennessee, at 8:00 a.m. October 10, 1955. Each team, after completing the preliminary examination, will wait to be conducted to the contest gallery when the team number is called.

13. The first-aid contest will begin at 10:00 a.m., October 11, and at 9:00 a.m., October 12, 1955, and continue until the completion of the contest.

14. The use of any type of mechanical resuscitating device will not be permitted in the first-aid or mine rescue events.

15. 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.

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

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

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

19. The prize-winning first-aid and mine rescue teams will be officially announced during the banquet on October 12, by a person or persons designated for this purpose.

20. Following the awarding of prizes, team ratings will be posted at a conspicuous place in the Andrew Johnson Hotel.

21. All rules relating to the contest will be rigidly enforced.

APPENDIX B: JUDGES' DISCOUNT CARD A, NATIONAL MINE RESCUE CONTEST

Preliminary Mine Rescue Questions Working Time - 10 Minutes

Captain (Team Member No. 1)

		Right	Wrong
1.	When breathing normal air, a man usually consumes 10 to 35 percent of the oxygen inhaled.	____	____
2.	Nearly pure oxygen (80 percent or more) if breathed at normal or slightly above atmospheric pressure will not harm an apparatus wearer.	____	____
3.	When charged to a pressure of 135 atmospheres a 2-hour apparatus bottle holds not less than 247 liters of oxygen.	____	____
4.	A metal tube projects into the oxygen bottle to obtain oxygen free of sediment.	____	____
5.	The safety valve whistles to warn the wearer that the oxygen supply is about exhausted.	____	____
6.	If the pressure-gauge tube or gage develops a leak or breaks, close the pressure-gage valve, use the bypass valve, and return to fresh air.	____	____
7.	The breathing bag acts as an air reservoir and reduces resistance to breathing.	____	____
8.	The two main objectives of testing apparatus are to determine the direction of the oxygen flow and to check functioning of working parts.	____	____
9.	When the admission valve is open to admit oxygen, approximately 2-1/4 inches of positive pressure is in the air-circulating system.	____	____
10.	An apparatus wearer's welfare depends on the efficiency of his apparatus, but a slight defect will not endanger his life if he cannot return to fresh air quickly.	____	____

Team Member No. 2

		Right	Wrong
1.	The resistance to breathing in any apparatus should never exceed 2 inches of water gage.	____	____
2.	The Gibbs and McCaa, 2-hour oxygen breathing apparatus, both have slight outward pressure in their air-circulating systems.	____	____
3.	A mine rescue crew wearing oxygen breathing apparatus can make explorations from the fresh-air base not to exceed 1,000 feet (2,000 feet round trip).	____	____
4.	The pressure in a fully charged oxygen bottle is 135 atmospheres or slightly over 2,000 pounds a square inch.	____	____
5.	To keep the reducing valve in a proper working condition, it is equipped with adjusting screws.	____	____
6.	To test the safety valve increase the pressure by opening the bypass valve.	____	____
7.	The high pressure ends at the end of the reducing valve nozzle, and the intermediate pressure ends at the seat of the admission valve.	____	____
8.	The date and initials of the team captain need not be marked at the faces if the team is using a life line.	____	____
9.	The admission and reducing valves are opened when the main bottle valve is closed.	____	____
10.	The inhalation check valve prevents the wearer from inhaling the outside atmosphere when the release valve is open.	____	____

Team Member No. 3

		Right	Wrong
1.	The Bureau of Mines believes that 2.5 percent carbon dioxide is the highest amount that should be present at any time in the inhaled air of an oxygen breathing apparatus.	____	____
2.	The universal gas mask is approved for general use in coal mines, because it can be used where a flame safety lamp will not burn.	____	____
3.	Some oxygen breathing apparatus can be worn in petroleum vapors safely for as much as one 2-hour period.	____	____
4.	Cardoxide will absorb carbon dioxide efficiently over a prolonged period of use.	____	____
5.	The breathing bag of an oxygen apparatus has one compartment with a capacity of about 8 liters or about 8 quarts when fully inflated.	____	____
6.	The admission valve is operated by the power of the lungs when the wearer breathes.	____	____
7.	The safety valve should operate at approximately 1.7 pounds above atmospheric pressure.	____	____
8.	The inhalation and exhalation valves in the mouthpiece regulate the volume of the oxygen in circulation.	____	____
9.	A fully charged apparatus contains 4.8 pounds of cardoxide.	____	____
10.	The maximum exhalation resistance in the apparatus is approximately 2 inches of water gage.	____	____

Team Member No. 4

	Right	Wrong
1. Inhaled air of an apparatus should not average more than 1 percent of carbon dioxide during a 2-hour period.	____	____
2. One-half of 1 percent of carbon dioxide in normal air causes a slight increase in breathing.	____	____
3. Flame safety lamps will not burn in a methane-free atmosphere having an oxygen content below 16.25 percent.	____	____
4. Self-rescuers are designed to protect a man for at least 30 minutes in an atmosphere containing 2 percent of carbon monoxide.	____	____
5. Flame safety lamps are now used in coal mines chiefly for detecting explosive gas and for illumination.	____	____
6. A man wearing a universal gas mask never should be allowed to enter a hazardous atmosphere by himself. At least one other man should accompany him.	____	____
7. The air capacity of the breathing bag is about 8 liters or approximately 16 quarts.	____	____
8. Approximately 8 to 10 percent of carbon dioxide is given off in exhalation.	____	____
9. The apparatus is in proper working condition when oxygen flow is in one direction.	____	____
10. The main bottle valve should not be opened more than one complete turn.	____	____

Team Member No. 5

		Right	Wrong
1.	The universal gas mask and the self-rescuer are the only two types of approved gas masks that afford respiratory protection against carbon monoxide.	____	____
2.	The chief advantage of a universal gas mask is that it adds to the oxygen breathed.	____	____
3.	Carbon dioxide is a normal constituent of mine air.	____	____
4.	Afterdamp is a gaseous product of a mine fire or an explosion of fire damp or coal dust.	____	____
5.	The flame safety lamp has no limitations as a gas detector.	____	____
6.	The safety cap attached to the bottle valve is required to provide for the escape of oxygen without rupture of the bottle during exposure of heat in excess of 94 degrees Fahrenheit.	____	____
7.	The reducing valve reduces high pressure to low pressure.	____	____
8.	The safety valve should leak at about 6 pounds and whistle or blow off at about 7 pounds pressure.	____	____
9.	The reducing valve needs repair if insufficient pressure is indicated by the testing gage.	____	____
10.	There are three valves in the metal mouthpiece.	____	____

APPENDIX B (Con.): JUDGES' DISCOUNT CARD B, NATIONAL MINE RESCUE CONTEST

Team No. _____

B. Checking Apparatus and Other Procedure Previous to Entering the Mine or Leaving Fresh-air Base

Note: Teams will be additionally discounted for repetition of the same mistake in the same problem, for example: Two members of crew breathing external air, 4 points discount.

		Discount
(a)	Apparatus improperly assembled, each man	3 _____
(b)	Failure to make tests for airtightness on high and low pressure side and operating test of admission valve and safety valve. Each omission on each apparatus including extra apparatus	1 _____
(c)	Apparatus improperly adjusted to wearer, each man	1 _____
(d)	Failure to evacuate apparatus completely of air before turning on oxygen (see manual), each man	3 _____
(e)	Apparatus part or parts worn or deteriorated so as to be dangerous to wearer, each man	3 _____
(f)	Oxygen supply of team member less than 100 or more than 150 atmospheres, each man	2 _____
(g)	Insufficient or too great rate of oxygen feed, evidenced by flat or high-inflated breathing bag, each apparatus	1 _____
(h)	Failure to examine gauges and apparatus before entering the mine, each apparatus	2 _____
(i)	Failure to take necessary equipment and gas-detecting devices to work the problem, each omission	2 _____
(j)	Failure to have equipment and gas-detecting devices ready for testing	1 _____
(k)	Failure to test completely extra apparatus or other protective device to be used when a live man is to be rescued	3 _____
(l)	Failure of team to "count off" before entering mine	2 _____
(m)	Failure of team to procure mine map	3 _____
(n)	Failure of team to arrange standard lifeline signals with fresh-air base	3 _____
(o)	Failure of team to be under oxygen and ready to enter the mine at the end of 10-minute preparation period. For each minute or fraction thereof over 10 minutes	1 _____
(p)	Team member talking to unauthorized persons without permission of the supervisor or judge, each infraction	5 _____
(q)	Breathing of external air after getting under oxygen, each man each infraction	2 _____
(r)	Failure to test stretcher	2 _____
	Total discounts	_____

Judge _____ Judge _____ Judge _____

APPENDIX B (Con.): JUDGES' DISCOUNT CARD C, NATIONAL MINE RESCUE CONTEST

Team No. _____

C. After Entering the Mine and Beyond Fresh-air Base

Note: Teams will be additionally discounted for repetitions of the same mistake in the same problem, for example: Unnecessary use of bypass valve, each infraction 2 points discount; excessive use of relief valve, each team member committing the infraction, 2 points discount, etc.

		Discount
(a)	Failure to take lifeline into mine	10 _____
(b)	Failure to signal properly by use of lifeline, using standard signals, each infraction	2 _____
(c)	None of team members having hold of lifeline, each infraction	2 _____
(d)	Any team members not having hold of lifeline, or having it firmly attached to his person in dense smoke. Each infraction	2 _____
(e)	Failure to maintain proper distance, 5 to 7 feet while traveling, each man	1 _____
(f)	Any team member traveling more than 35 feet from the nearest stationary member of team. Each infraction	2 _____
(g)	Failure to signal properly with horn or other similar device, if not corrected, each infraction	1 _____
(h)	Failure to mark course of travel at corners, each infraction	2 _____
(i)	Failure to mark date, team number and initial, face of rooms, entries, crosscuts, impassable falls, barricades and stoppings, each infraction	2 _____
(j)	Failure of captain to direct or command crew properly, each infraction	2 _____
(k)	Captain or other team member doing anything to endanger safety of the crew, each infraction	4 _____
(l)	Failure of the captain to test roof, sound and vibration method	2 _____
(m)	Failure to examine gages and clear apparatus of excessive nitrogen at least 3 times during the working of problem, each infraction	4 _____
(n)	Breathing external air while working problem, each team member, each infraction	6 _____
(o)	Unnecessary use of bypass, each team member	2 _____
(p)	Excessive use of release valve	2 _____
(q)	In the event the nose clip slips off while working the problem. If team member replaces nose clip without breathing outside air, do not discount, otherwise discount, each infraction	1 _____
(r)	Working all or part of a problem without nose clip in place, each team member	8 _____

		Discount
(s)	Failure to find fire, gas, smoke, barricades, stoppings, falls, doors and other conditions when actually in the mine or when indicated by signs or otherwise, each omission	3 ____
(t)	Failure to test at all stops for poisonous irrespirable or flammable gases, each infraction	3 ____
(u)	Improper procedure when testing with flame safety lamp and detector.	2 ____
(v)	Failure to use flame safety lamp properly in mixture of air and methane, each infraction	4 ____
(w)	Failure of team to cover light or to indicate turning off cap lamp while testing for gas with flame safety lamp (nonluminous flame only) each team member, each infraction	1 ____
(x)	Failure to return to known fresh air when relighting flame safety lamp, each infraction	2 ____
(y)	Excessive talking, each team member	2 ____
(z)	Failure to find live men, each omission	20 ____
(aa)	Failure to locate body or bodies. Each omission	10 ____
(bb)	Failure to properly protect live man or men, each omission	8 ____
(cc)	Failure to have main bottle valve open and to open and close bypass valve 2 times before placing apparatus on patient	2 ____
(dd)	Failure to clear apparatus before placing it on patient, each omission	2 ____
(ee)	Apparatus mouthpiece and nose clip not properly adjusted to patient, also goggles when necessary	2 ____
(ff)	Failure to test stretcher before loading patient on it, each omission	2 ____
(gg)	Rough or awkward handling of patient	2 ____
(hh)	Failure to tie patient's arms, tie patient to stretcher, or cover patient with blanket, each omission	2 ____
(ii)	Assistance lent by unconscious patient	2 ____
(jj)	Improper placing of patient on stretcher, each infraction	2 ____
(kk)	Transporting patient in unexplored territory when unnecessary, each infraction	4 ____
(ll)	Failure to erect temporary barricade when necessary, each infraction	6 ____
(mm)	Failure to erect temporary barricade, seal, or stopping reasonably airtight, each infraction	2 ____
(nn)	Failure of team to explore or examine workings systematically and thoroughly, each omission	4 ____
(oo)	Failure of one or more team members to leave fresh air base, each team member	12 ____
(pp)	Failure of less than 5 team members to complete problem, each	8 ____
(qq)	Failure to complete problem in the time specified, each minute or fraction of a minute	1 ____
	Total discounts	____

Judge _____ Judge _____ Judge _____

APPENDIX B (Con.): JUDGES' DISCOUNT CARD D, NATIONAL MINE RESCUE CONTEST

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 remain in smokeroom the entire specified period, each man	6 _____
(c)	Failure to turn over to judges marked map within 10 minutes after starting consultation; for each minute or fraction thereof overtime	1 _____
(d)	Failure to locate and record on map with reasonable accuracy conditions as found or indicated in the mine, each omission	2 _____
	Total discount	_____

_____ _____ _____

Judge Judge Judge

APPENDIX C: RULES GOVERNING NATIONAL MINE RESCUE CONTEST, 1955

1. Each team shall be composed of 5 men, 1 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 United States Bureau of Mines. Provision for six men if telephone is used.

2. Each team should bring one substitute to be available for use in case of sickness or for any other reason a team member is unable to compete or to act as patient if a patient is required in the problem.

3. The substitute or patient shall weigh approximately the same as the average weight of the team members.

4. Members of mine rescue teams must not be over fifty (50) years of age, as older men than this will not be permitted to participate.

5. Prior to the beginning of the mine rescue contest the team captain will present to the chief judge a medical certificate, dated not over 30 days prior to the contest, showing that each member of his team (including the captain) is physically sound and capable of performing strenous work under oxygen. No examination at field. False teeth OK for contest work.

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

7. Goggles should be in place but need not be worn over eyes unless conditions actually require their use.

8. Any oxygen or other self-contained breathing apparatus approved by the United States 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 right or wrong written or oral examination and will perform one or more problems. The teams will be furnished a problem, and 10 minutes will be allowed for its study prior to putting on apparatus and other preparations before entering the mine.

11. Before reporting to the mine entrance all apparatus must be fully assembled and ready to wear. Oxygen bottles shall be charged to 100 atmospheres or above, but not to exceed 150 atmospheres. It will be the teams' responsibility to have the apparatus sufficiently charged with oxygen for the contest.

12. In the event 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 which is ready. A crew which waives its numerical place shall automatically take the position of the team which replaces it.

13. Lifelines, 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. However, obtaining this material will be the teams' responsibility.

14. Each team should have its own canary birds and cages or United States Bureau of Mines approved carbon monoxide detectors, CO testers, and flame safety lamps; however, if a team does not have such equipment it will be furnished by the field committee on request.

15. Apparatus will be furnished by the field committee on request 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 excepting designated officials will be allowed to communicate with the teams waiting to perform problems. Teams which 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 10 additional minutes for checking and marking the map.

19. The chief judge and his assistant will be men trained in the assembly, 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 at the discretion of a committee of judges result in the disqualification of the team or teams involved.

Preliminary Examination of Crews

1. The preliminary examination of crews will be held in a place designated and assigned by the contest committee and chief judge prior to contest.

2. Examination of crews will be conducted in the order of the number drawn for position.

3. A judge or judges will examine the captain and other team members as to their knowledge of the proper operation, assembly, and testing of oxygen or other self-contained breathing apparatus, gas masks, self-rescuers, gas-detecting devices, and methods of procedure.

4. Teams being examined will be supervised by 2 or more judges, at least 1 of whom will be a Bureau of Mines employee. The committees of judges will work under the chief judge.

5. The judges will observe the captain and other team members as to their knowledge of proper operation, assembly, and testing of self-contained breathing apparatus, gas masks, self-rescuers, gas-detecting devices, and methods of procedure during the 10-minute preparation period.

6. Judges shall not ask questions that do not relate to the problem or appear on the scorecard.

Procedure of Rescue Crews in Performing Problems

1. Teams will report to the judges when called upon. Ten minutes will then be allowed for study of the problem and inspection of apparatus and equipment. At the end of the 10-minute period, a whistle or gong will be sounded.

2. Each team will be given a written problem. The problem will indicate clearly the specified procedure of the team and will show the working time permitted.

3. During the 10-minute preparation period, team members must check apparatus for working condition and air tightness. High- and low-pressure tests, admission-valve opening and closing tests, and whistle-valve test must be made.

4. Each team member must clear his apparatus before getting under oxygen and then proceed to perform the problem.

5. The team will check lifeline signals with the judge at the lifeline reel, procure mine map, procure and place in operating condition gas-detecting devices, procure stretcher, and any other materials needed for the working of the problem.

6. Standard lifeline 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. If telephone is used, it will replace the use of the lifeline.

8. Team must count off.

9. Horns or other audible signals between team members will be the same as given for lifeline signals.

10. Crew members will keep lifeline taut at all times in order to be able to give or receive signals.

11. Persons selected by the United States Bureau of Mines will operate the lifeline at the fresh-air base for all crews unless telephone is used.

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

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

14. 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, also, the day, month, and year of the trip, in order 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 after the 10-minute time allotted as mentioned elsewhere in these rules.

15. 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, and the captain indicates to the judges by raising his hand that the problem has been completed.

16. A penalty for overtime for each minute or fraction thereof will be made in accordance with the points shown on the discount sheet. A signal will be given for each minute overtime.

17. After the crew completes the working of the problem, have had their apparatus examined by the judges, and removed their mouthpieces and nose clips, 10 minutes will be given to check and mark the map before turning it over to the judges.

18. 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.

19. Each team as it performs a problem will be rated by a committee of judges. A Bureau of Mines employee will be the chairman for the judges, and he will work under a chief judge.

Judging

1. Insofar as possible, only men trained in the assembly, use, and care of the different types of mine rescue equipment and trained in mine rescue procedure will be used as judges.

2. Groups of 5 men will judge the preliminary examination, and groups of 5 men will judge during the 10-minute preparation period. Judges will be stationed in the mine and will score the teams on the particular part of the problem assigned to them. Judges will be assigned to act as timekeepers and will indicate on the scorecard where the apparatus is cleared and where lifeline or other signaling is performed. These same or a separate group of judges will score the teams in the smoke room and will check maps.

3. The judge or judges will mark a scorecard for work done by each team in their specified area. All judges will sign discounts where given. Discount sheets will be marked and delivered to the scorecard examiner promptly.

Miscellaneous

1. Problems will be on a flat layout, having no inclines or ladders, unless the team has been notified to the contrary prior to the date of the contest.

2. Only problems which can be worked in 25 to 35 minutes will be given, and insofar as possible, materials rather than placards will be used in the mine.

3. The captain and 1 or more team members may advance a maximum of 35 feet inby the rest of the team, or the rear man may go back from the team a like distance when in an atmosphere reasonably free of smoke.

4. Roof examinations must be made from rib to rib at working faces. Roof examinations need not be made along ribs unless material or placards are along the rib.

5. Stations or stops in the discount sheet mean any place in the mine where the entire team is stopped for any purpose.

6. Lamp and detector tests must be made in the entire face area as well as in boxes if testing boxes are being used. Examinations should begin on the side of the place opposite the testing box and the face area should be examined before a test is made in the box.

7. Roof tests should be made by the sound-and-vibration method.

8. Examinations for gas may be made with a walking or traveling flame or with a nonluminous flame.

9. No person or persons other than the judges, contest officials, and team members be permitted in the working areas.

INTERPRETATIONS FOR JUDGES AND TEAM TRAINERS

Previous to entering the mine or leaving fresh-air base

1. Apparatus should be evacuated of air before turning on oxygen, as shown on page 97 of the 1941 edition of the Bureau of Mines Manual on Self-Contained Oxygen Breathing Apparatus.

2. The captain must examine the gages and apparatus of team members and have a team member examine the captain's gage and apparatus before entering the mine.

3. Extra apparatus must be tested for airtightness and proper working condition. High- and low-pressure tests, admission-valve opening and closing tests, and whistle-valve tests must be made. Tester should not put mouthpiece in his mouth while testing.

4. Hand or audible counting off is acceptable Team members must "count off" immediately before leaving fresh-air base or surface. It is not necessary to "count off" on reentering the mine during the working of the problem.

5. Team member will be discounted for breathing external air or for failure to place the nose clip promptly after oxygen has been turned on

After entering the mine and beyond fresh-air base

1. This section is not intended to cover horn signals but covers only lifeline signals. Signals must be given before leaving fresh-air base.

2. Teams must not be discounted under other sections for wrong horn signaling.

3. Course of travel should be marked, regardless of whether or not a lifeline is used. Arrows need be marked only around corners, but they must point toward place of entrance. Course of travel should only be used.

4. Items other than those listed specifically on the discount sheet need not be marked.

5. An interval of 5 to 7 feet between any 2 members of the team will not be considered improper.

6. Teams will not be discounted under this section unless the safety of the crew is actually endangered. Examples of endangering the crew are traveling under unsupported dangerous roof and carrying a lighted flame safety lamp into dangerous mixtures. Where methane can be detected by a flame safety lamp (1 percent or more) the lamp shall be extinguished.

APPENDIX D: OFFICIALS AND JUDGES, MINE RESCUE AND FIRST-AID CONTESTS

Organization	Assignment	
	Mine rescue	First aid
Alabama Department of Industrial Relations		
Williams, W. H.	Advisor to director	Advisor to director.
Bituminous Coal Operators Association		
Ankeny, M. J.	Timekeeper	Timekeeper.
Bureau of Mines		
Adams, N. L.		Judge.
Allamon, T.	Judge	Do.
Allen, L. E.	do.	Do.
Allen, W. M.		Do.
Arthur, William	do.	Do.
Aspinwall, C. C.		Do.
Baker, F. D.		Do.
Barger, D. W.	do.	Do.
Basinger, H. E.	Lifeline	Do.
Betchey, G. M.		Do.
Bickelman, H.		Do.
Biggs, J. E.		Do.
Bird, J. Howard	Registrar and recorder	Registrar and recorder.
Blackwood, Brooks	Judge	Judge.
Bosley, J. C.		Do.
Bradford, R. D.	do.	Do.
Brown, D. L. Jr.		Do.
Brown, Eric	Timekeeper	Chief judges' committee (acting).
Buchanan, P. J.	Judge	Judge.
Bukovitz, S. J.		Do.
Burdelsky, H. R.		Chief judge.
Burgess, W. R.		Judge.
Cagley, W. C.	Judge	Do.
Callahan, J. T.		Do.
Capps, Roy	do.	Do.
Casey, Clyde W.		Do.
Cavendish, C. C.		Do.
Chastain, G. W.	Map examiner	Do.
Cochran, R. L.	Judge	Do.
Colbert, G. W.	do.	Do.
Confer, E. B.	Guard	Supervising judge.
Cordray, W. M.	Judge	Judge.
Couk, H. D.		Do.
Cromwell, J. W.	do.	Do.
Curry, T. F.		Do.
Dalzell, C. J.	Supervising judge	Supervising judge.
Davis, J. C.	Guard	Judge.
Davis, M. L.	Assistant chief judge	Problem distributor.
Demkowicz, W. M.	Scorecard examiner	Scorecard examiner.

APPENDIX D: OFFICIALS AND JUDGES, MINE RESCUE AND FIRST-AID CONTESTS (Con.)

Organization	Assignment	
	Mine rescue	First aid
Bureau of Mines (Con.)		
DeWeese, R. C.		Judge.
Dobis, J. J.	Judge	Do.
Dougherty, J. J.	Registrar and recorder	Registrar and recorder.
Dovidas, C. M.	Assistant chief judge	Judge.
Duke, W. E.		Do.
Elkins, Omar	Guard	Do.
Emershaw, J. G.		Do.
Engel, H. H.		Do.
Estep, C. E.		Do.
Farren, G. C.	Judge	Do.
Farris, Jay D.		Do.
Fene, W. J.	Registrar	Registrar.
Ferraro, J. S.	Judge	Judge.
Flaherty, Florence H.	Registrar	Registrar.
Foerster, Marianne	do.	Do.
Forbes, J. J.	Director	Director.
Freas, George L.		Problem distributor.
Furin, F. J.	Judge	Judge.
Gay, T. W.		Do.
Gilley, J. L.	do.	Supervising judge.
Guthrie, Arthur	do.	Judge.
Haley, J. F.		Do.
Harris, E. J.		Do.
Harris, O. W.		Do.
Higgins, T. C.		Supervising judge.
Hyde, C. E.		Judge.
Johnson, J. A.	Registrar	Scorecard examiner.
Jones, J. E.		Judge.
Jordan, Fornie, A.	Mine attendant	Do.
Kemrite, F. E.		Do.
Kessler, W. W.	Judge	Do.
Kopp, A. J.	do.	Do.
Lewis, Edward M.		Do.
Linville, R. T.		Do.
Luke, G. W.		Do.
Malesky, J. S.	Timekeeper	Timekeeper.
Mark, T. R. Jr.		Judge.
Marron, E. J.	Judge	Do.
Marshalek, J.	do.	Do.
Martin, J. D.		Do.
Matsko, John		Do.
McCall, M. C.	Scorecard examiner	Supervising judge.
McCrary, W. G.		Judge.
Mears, G. L.	Judge	Do.
Neal, Joseph		Do.
Nelson, J. L.		Do.
Noe, George		Do.
Null, V. D.	Judge	Do.

APPENDIX D: OFFICIALS AND JUDGES, MINE RESCUE AND FIRST-AID CONTESTS (Con.)

Organization	Assignment	
	Mine rescue	First aid
Bureau of Mines (Con.)		
Park, W. R.	Chief judge	Scorecard examiner.
Pendergast, J. J. Jr.		Judge.
Pieper, L. W.	Registrar and recorder	Registrar and recorder.
Pierceall, Lee	Timekeeper	Recorder.
Puskas, A.		Judge.
Quenon, E. E.	Supervising judge	Supervising judge.
Rachunis, William	Registrar	Registrar.
Ratkovich, D. R.	Guard	Judge.
Reese, Jack		Do.
Scully, T. A.	Judge	Do.
Senio, P. P.	Photographer	Photographer.
Sloman, H. J.	Registrar and recorder	Registrar and recorder.
Stewart, W. R.	Judge	Judge.
Stout, F. W.	Guard	
Strubeck, Henry	do.	Do.
Tomlinson, W. H.	Announcer	Announcer.
Turner, Everett		Judge.
Walker, W. Dan, Jr.	Assistant director	Assistant director.
Warncke, R. G.	Arrangements	Arrangements.
Watson, C. F.		Judge.
Westfield, James	Chief Judges' Committee	Chief Judges' Committee.
Whittaker, R. W.	Judge	Judge
Wiley, H. H.	do.	Do.
Wilson, H. F.	Lifeline	Do.
Wilson, J. F.	Judge	Do.
Zeleskey, John		Do.
Zimmerman, Dee		Supervising judge.
Illinois Department of Mines and Minerals		
Ivy, Arch		Problem distributor.
Kotzman, J. J.		Judge.
Reak, Murrell	Advisor to director	Advisor to director.
Williams, W. J.		Supervising judge.
Indiana Bureau of Mines and Mining		
Purcell, Chas. A.	do.	Advisor to director.
Kentucky Department of Mines and Minerals		
Bailey, Rufus	Judge	Judge
Bartlett, Everett	do.	Do.
Brooks, Chester	do.	Do.
Cox, Otis	Timekeeper	Timekeeper.
Elkins, Pearl	Supervising judge	Scorecard examiner.
Flint, Warnie, Jr.	Judge	Judge.
Forsythe, John	Recorder	Recorder.

APPENDIX D: OFFICIALS AND JUDGES, MINE RESCUE AND FIRST-AID CONTESTS (Con.)

Organization	Assignment	
	Mine rescue	First aid
Kentucky Department of Mines and Minerals (Con.)		
Jackson, Noah	Supervising judge	Supervising judge.
Layne, Elmer	Judge	Scorecard examiner.
Powell, Clarence	Gas-box attendant	Gas-box attendant.
Rhodes, Frank	do.	Judge.
Risnor, O. L.	Map examiner	Supervising judge.
Rose, Paul	Judge	Judge.
Runyon, Jacob	Messenger	Do.
See, Raymond	Judge	Scorecard examiner.
Sexton, Paul	Judge	Judge
Sisk, A. D.	Advisor to director	Advisor to director.
Smithers, Carl	Gas-box attendant	Judge.
Stanley, Willard	Judge	Do.
Webb, Arlie	do.	Supervising judge.
Webb, W. H.	do.	Judge.
Ohio Division of Mines		
Chadwick, J.		Problem distributor.
Dusz, H. J.	Advisor to director	Advisor to director.
Gaskins, Fred		Judge.
Pennsylvania Department of Mines		
Beaney, T. M.	Judge	Do.
Evans, Lewis	Advisor to director	Advisor to director.
Maize, C. H.	Judge	Judge.
Wilson, Andrew	do.	Do.
Southern Coal Producers Association		
Benson, J. B.	Chief Judges' Committee	Chief Judges' Committee
Tennessee Division of Mines		
Miller, J. R.	Advisor to director	Advisor to director.
Payne, J. H.		Problem distributor.
United Mine Workers of America		
Leeber, James, Jr.	Chief Judges' Committee	Chief Judges' Committee.
Raynor, Andrew	Timekeeper	Timekeeper.
Schuler, L. W.	Coordinating director	Coordinating director.
Virginia Division of Mines		
Kelley, C. P.	Advisor to director	Advisor to director.

APPENDIX D: OFFICIALS AND JUDGES, MINE RESCUE AND FIRST-AID CONTESTS (Con.)

Organization	Assignment	
	Mine rescue	First aid
West Virginia Department of Mines		
Artis, Harry	Judge	Judge.
Baldwin, Leslie	do.	Do.
Bennett, C. I.	Guard	Do.
Berry, W. M.	Recorder	Recorder.
Booker, Bernice	Judge	Judge.
Cook, James		Supervising judge.
Easton, Andrew	Mine attendant	Judge.
Gillespie, James	Judge	Do.
Gooding, Charles	Messenger	Do.
Graham, R. L.	Judge	Do.
Jarvis, Edward	Map examiner	Do.
Kuhn, M. E.	Judge	Do.
Lawrence, E. J.	do.	Do.
Lechiara, Meile	do.	Do.
Light, Jack	Mine attendant	Judge.
Look, J. M.	Supervising judge	
McCormick, Robert	Judge	
Mills, Okey	do.	Do.
Olzer, J. C.	Advisor to director	Advisor to director.
Querry, James	Judge	Judge.
Ryan, Leslie	Lifeline	Do.
Thompson, H. C.	Judge	Do.
White, Hurxtle	do.	Do.

APPENDIX E: FIRST-AID PROBLEMS

Problem 1

Three minutes will be allowed for reading problem and assembling material.

A brakeman jumps from a moving trip of mine cars to open a door, slips and falls, is struck by the moving locomotive, and receives the following injuries: He is lying on his back, and the lower part of his body is paralyzed; he also has a fracture of the lower jaw and a 4-inch wound on the inside of the left thigh, spurting bright red blood. Patient is unconscious and suffers from physical shock. Treat.

Working time - 8 minutes.

- -

List of injuries and treatment:

1. Arterial bleeding, wound on left thigh.
2. Physical shock.
3. Wound on left thigh.
4. Fracture of lower jaw.
5. Broken back.

Outline for Working Problem

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

2. Physical shock.
   (a) Head level with body. (When patient is placed on broken-back splint, foot end of splint must be raised.)
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be used.
   (f) Give tested stimulants by inhalation.

3. Wound on left thigh.
   (a) Apply bandages as for wound of thigh. (See p. 67 and fig. 30, B.)

4. Fracture of lower jaw.
   (a) Apply bandages as for fracture of lower jaw. (See p. 89 and fig. 39.)

5. Broken back.
   (a) Test broken-back splint.
   (b) Apply padded splint to front of body (on top of patient).
   (c) Apply bandages as for broken back. (See p. 99 and fig. 45, B.)
   (d) Elevate foot end of splint at least 6 inches.

Problem 2

Three minutes will be allowed for reading problem and assembling material.

A wireman is found along the haulage road in the mine lying on his back unconscious and not breathing. The left arm is rigid at the shoulder, the left elbow stands off a distance of 2 inches from his body, the shoulder appears flat, and there is a marked depression beneath the point of the shoulder. The ends of bones can be seen on the inside of the wireman's right leg 6 inches below the knee, and the leg is out of line from normal position. There is a wound on the left side of face. Give artificial respiration by 3 different men for 2 minutes each. Treat, and prepare for transportation.

Working time - 8 minutes.

- -

List of injuries and treatment:

1. Artificial respiration (Schafer method).
2. Control of bleeding (compound of right leg).
3. Physical shock.
4. Wound on right leg.
5. Wound on left side of face.
6. Compound fracture of right leg.
7. Dislocation of left shoulder.
8. Prepare for transportation.

Outline for Working Problem

1. Artificial respiration (Schafer method).
   (a) Remove all foreign bodies from mouth. See that tongue is forward.
   (b) Loosen tight clothing from neck, chest, and waist.
   (c) Apply tested heated objects to body.
2. Control of bleeding (compound fracture of right leg).
   (a) Apply tourniquet loosely to thigh pressure point.
3. Physical shock.
   (a) Head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) See that tight clothing has been loosened from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressing.
   (e) Give tested stimulant by inhalation during artificial respiration, and give tested stimulant by mouth after artificial respiration is completed.
4. Wound on inside of right leg (compound fracture).
   (a) Apply bandages as for wound of leg. (See p. 68 and fig. 31, B.)
5. Wound on left side of face.
   (a) Apply bandages as for wound of face. (See p. 53 and fig. 20, C.)
6. Fracture of right leg (compound).
   (a) Support fracture of leg.
   (b) Apply padded splint and bandages as for fracture of leg. (See p. 103 and fig. 47, C.)
7. Dislocation of left shoulder.
   (a) Support dislocated shoulder.
   (b) Apply bandages as for dislocation of shoulder. (See p. 106 and fig. 49, A.)
8. Prepare for transportation.
   (a) Test stretcher.
   (b) Three men lift from least injured side and place patient on stretcher.
   (c) Elevate foot end of stretcher at least 6 inches.

Problem 3

Three minutes will be allowed for reading problem and assembling material.

A roof-bolt driller fails to set a safety post and is caught by a fall of roof near the working face; when the rock and "slate" are removed from him, the following injuries are observed: Fracture of the neck; simple fracture of the left hand; a 1-inch wound on the first joint of the index finger of the right hand; a dislocation of the first joint of the index finger of the right hand. Patient is unconscious and suffering from physical shock. Treat, transport on stretcher for 25 feet, return to original position, and unload patient from stretcher.

Working time - 10 minutes.

- -

List of injuries and treatment:

1. Physical shock.
2. Wound on first joint of index finger of right hand.
3. Fracture of left hand.
4. Fracture of neck.
5. Dislocation of first joint of index finger of right hand.
6. Transportation.

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, foot end of splint should be elevated.
   (b) Remove all foreign bodies from mouth; see that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be used.
   (f) Give tested stimulant by inhalation.

2. Wound on first joint of index finger of right hand.
   (a) Apply bandage as for wound of finger. (See p. 61.)

3. Fracture of left hand.
   (a) Support fracture of left hand.
   (b) Apply padded splint and bandages as for fracture of hand. (See p. 94 and fig. 42, B.)

4. Fracture of neck.
   (a) Support fracture of neck until the fifth bandage has been tied.
   (b) Place patient on tested broken-back splint.
   (c) Tie as for broken neck. (See p. 97 and fig. 45, A.)

5. Dislocated first joint of index finger of right hand.
   (a) Do not reduce dislocation. (See p. 108.)

6. Transportation.
   (a) Test stretcher.
   (b) Lift patient onto stretcher. Three men lift from the least injured side.
   (c) Carry stretcher 25 feet and return to original position.
   (d) Unload patient from stretcher.
   (e) Elevate foot end of splint at least 6 inches.

Problem 4

Three minutes will be allowed for reading problem and assembling material.

A machineman has been squeezed between a rib and a mining machine and is found lying face down with the following injuries: A fracture of the right hip; a wound on the palm of the right hand, bleeding in spurts; a wound on point of chin; simple fracture of left foot. The patient is unconscious and in a state of physical shock. Treat, and prepare for transportation.

Working time - 8 minutes.

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List of injuries and treatment:

1. Arterial bleeding, palm of right hand.
2. Physical shock.
3. Wound on palm of right hand.
4. Wound on chin.
5. Fracture of left foot.
6. Fracture of right hip.
7. Prepare for transportation.

Outline for Working Problem

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

2. Physical shock.
   (a) Head should be level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Heated objects may or may not be applied.
   (f) Give tested stimulant by inhalation.

3. Wound on palm of right hand.
   (a) Apply bandages as for wound of palm of hand. (See p. 59 and fig. 24, A.)

4. Wound of chin.
   (a) Apply compress bandage as for wound of chin. (See p. 56 and fig. 21, D.)

5. Fracture of left foot.
   (a) Support fracture of foot.
   (b) Apply padded splint and bandages as for fracture of foot. (See p. 103 and fig. 48.)

6. Fracture of right hip (patient lying face down).
   (a) Support hip until two wide bandages are tied.
   (b) Test splint.
   (c) Apply padded splint, and tie to back of body before turning patient over.
   (d) Apply bandages as for fracture of hip. (See p. 100 and fig. 46.)
   (e) Pass a cravat bandage around the head and splint or board and tie it.
   (f) Tie the forearms folded across the chest. (See fig. 7, p. 20.)

7. Prepare for transportation.
   (a) Test stretcher.
   (b) Three men lift from least injured side and place patient on stretcher.
   (c) Elevate foot end of stretcher at least 6 inches.

Problem 5

Three minutes will be allowed for reading problem and assembling material.

A shuttle car struck a post supporting a crossbar, which dislodged some timbers, causing the roof to fall on the operator. When the material was removed from the operator the following injuries were observed: A compound fracture of the right thigh 6 inches above the knee, with no bleeding; a wound of the right eye; a dislocated lower jaw; a crushed right hand with the skin scraped off the back of the hand from the wrist to the end of the fingers and with slight bleeding; a dislocation of the left elbow, with the arm in a straight position. The patient is conscious and suffers from physical shock. Treat, and prepare for transportation.

Working time - 8 minutes.

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List of injuries and treatment:

1. Control of bleeding (compound fractures).
2. Physical shock.
3. Wound of right thigh.
4. Wound of right eye.
5. Extensive wounds, back of right hand and fingers.
6. Fracture of right thigh (compound fracture 6 inches above knee).
7. Crushed right hand (compound fracture).
8. Dislocation of left elbow (straight position).
9. Dislocation of lower jaw.
10. Prepare for transportation.

Outline for Working Problem

1. Control of bleeding.
   (a) Apply tourniquet loosely at thigh pressure point (compound fracture of right thigh).
   (b) Apply tourniquet loosely at arm pressure point (compound fracture of right hand).

2. Physical shock.
   (a) Head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be applied.
   (f) Give tested stimulant by mouth.

3. Wound of right thigh (compound fracture).
   (a) Apply bandages as for wound of thigh. (See p. 67 and fig. 30, B.)
   (b) Do not tie knot of compress or cravat bandage over wound.

4. Wound of right eye.
   (a) Apply compress as for wound of eye. (See p. 54 and fig. 21, B.)

5. Extensive wounds of back of right hand and fingers (compound fracture).
   (a) Apply bandages as for extensive wounds and bleeding of hand. (See p. 61 and fig. 25.)

Problem 5 (Con.)

6. Fracture of right thigh (compound fracture 6 inches above knee).
   (a) Support fracture of thigh.
   (b) Apply padded splint and bandages as for fracture of thigh. (See p. 101 and fig. 47A.)

7. Crushed right hand (compound fracture).
   (a) Support fracture of hand.
   (b) Apply padded splint and bandages as for crushed hand. (See p. 94 and fig. 42, B.)

8. Dislocation of left elbow (straight position).
   (a) Support dislocated elbow.
   (b) Apply padded splint and bandages as for dislocated elbow in straight position. (See p. 106 and fig. 49, B.)

9. Dislocation of lower jaw.
   (a) Reduce dislocation of lower jaw.
   (b) Place wedge between teeth.
   (c) Apply bandages for dislocated jaw. (See p. 105 and fig. 39, page 89.)

10. Prepare for transportation.
   (a) Test stretcher.
   (b) Three men lift from the least injured side and place patient on stretcher.
   (c) Elevate foot end of stretcher at least 6 inches.

Problem 6

Three minutes will be allowed for reading problem and assembling material.

A surface worker falls from a ladder and receives the following injuries: A wound on the back of the left ear; a wound on the inside of the right forearm 6 inches below the elbow with bright red blood spurting; a fracture of the left collarbone; a wound of the crotch with slight bleeding; and a sprained left ankle. The patient is unconscious throughout the problem, face is flushed, skin is hot and dry, pulse strong and rapid, and the pupils of the eyes are enlarged but of equal size. Treat, transport on stretcher for 25 feet, return to original position, and unload patient from stretcher.

Working time - 10 minutes.

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List of injuries and treatment:

1. Arterial bleeding from right forearm.
2. Sunstroke.
3. Wound on inside of right forearm 6 inches below elbow.
4. Wound on back of left ear.
5. Wound of crotch.
6. Fracture of left collarbone.
7. Sprained left ankle.
8. Transportation.

Outline for Working Problem

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

2. Sunstroke.
   (a) Remove patient to a cool place.
   (b) Elevate head with padding.
   (c) Remove as much clothing as necessary and apply cold applications to body and head.
   (d) Rubbing patient's limbs toward the heart aids circulation. Rub through wet sheet.
   (e) Give no stimulant.

3. Wound on inside of right forearm 6 inches below elbow.
   (a) Apply bandages as for wound of forearm. (See p. 58 and fig. 23, B.)

4. Wound on back of left ear.
   (a) Apply bandages as for wound of ear. (See p. 53 and fig. 20, A and B.)

5. Wound of crotch.
   (a) Apply bandages as for wound of crotch. (See p. 66 and fig. 29, A and B.)

Problem 6 (Con.)

6. Fracture of left collarbone.
   (a) Support injured arm at elbow.
   (b) Apply bandages as for fracture of collarbone. (See p. 90 and fig. 40.)

7. Sprained left ankle.
   (a) Elevate foot and ankle.
   (b) Apply cold applications.
   (c) Bandage for sprained ankle may or may not be applied.

8. Transportation.
   (a) Test stretcher.
   (b) Lift patient on stretcher. Three men lift from least injured side.
   (c) Carry stretcher 25 feet, and return to original position.
   (d) Unload patient from stretcher.

Problem 7

Three minutes will be allowed for reading problem and assembling material.

A lineman while working on a telegraph pole comes in contact with a live electric wire and falls from the pole, lying face downward, unconscious and not breathing. He has a compound fracture of the left kneecap; a 3-inch wound on the outside of the right ankle; and a wound of the right hip. Resuscitate by all team members (except patient) performing artificial respiration for 2 minutes each. Patient regains consciousness at the end of artificial respiration but suffers from shock throughout problem. Treat, and prepare for transportation.

Working time - 12 minutes.

List of injuries and treatment:

1. Artificial respiration.
2. Control of bleeding (compound fracture).
3. Physical shock.
4. Wound of left kneecap (compound fracture).
5. Wound of right hip.
6. Wound on outside of right ankle.
7. Fracture of left kneecap (compound).
8. Prepare for transportation.

Outline for Working Problem

1. Artificial respiration.
   (a) Remove all foreign bodies from mouth. See that tongue is forward.
   (b) Loosen tight clothing from neck, chest, and waist.
   (c) Apply tested heated objects.
   (d) All team members (except patient) perform artificial respiration for 2 minutes each (12 respirations per minute). Back-pressure arm-lift method.
   (e) Change of operators to be made without breaking rhythm.

2. Control of bleeding (compound fracture).
   (a) Apply tourniquet loosely at thigh pressure point (compound fracture of left kneecap). (See p. 42.)

3. Physical shock.
   (a) Head level with body.
   (b) Remove all foreign objects from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Give tested stimulants by inhalation during artificial respiration and give tested stimulant by mouth after completion of artificial respiration.

4. Wound of left kneecap.
   (a) Apply bandages as for wound of knee. (See p. 68 and fig. 31, A.)

Problem 7 (Con.)

5. Wound of right hip.
   (a) Apply bandages as for wound of hip. (See p. 67 and fig. 30, A.)

6. Wound on outside of right ankle.
   (a) Apply bandages as for wound of ankle. (See p. 68 and fig. 32, A.)

7. Fracture of left kneecap (compound fracture).
   (a) Support fracture of kneecap.
   (b) Apply padded splint and bandages as for fracture of kneecap. (See p. 103 and fig. 47, B.)

8. Prepare for transportation.
   (a) Test stretcher.
   (b) Three men lift from the least injured side, and place patient on stretcher.
   (c) Elevate foot end of stretcher at least 6 inches.

Problem 8

Three minutes will be allowed for reading problem and assembling material.

A mechanic was on an elevated platform in the cleaning plant making some needed repairs when an explosion occurred, resulting in his fall from the platform. He was found lying on his back and had received the following injuries: A fracture of the right elbow with forearm bent across the chest; second-degree burns of the face and ears; left foot fractured, with bright red blood spurting from an open wound on the bottom of the foot; a wound on the chest midway between the shoulders; a wound on the left hip with slight bleeding; and a wound on the point of the right elbow. The patient is conscious throughout the problem and is suffering from physical shock. Treat, and prepare for transportation.

Working time - 10 minutes.

List of injuries and treatment:

1. Arterial bleeding, bottom of left foot (compound fracture).
2. Control of bleeding (compound fracture of right elbow).
3. Physical shock.
4. Wound on bottom of left foot (compound fracture).
5. Wound on point of right elbow (compound fracture).
6. Wound on chest between shoulders.
7. Wound on left hip.
8. Burns of face and ears.
9. Fracture of left foot (compound fracture).
10. Fracture of right elbow (compound fracture).
11. Prepare for transportation.

Outline for Working Problem

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

2. Control of bleeding.
   (a) Apply tourniquet loosely in armpit pressure point (compound fracture of right elbow).

3. Physical shock.
   (a) Head level with body.
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be applied.
   (f) Give tested stimulant by inhalation.

4. Wound on bottom of left foot (compound fracture).
   (a) Apply bandages as for wound of foot. (See p. 69 and fig. 32, B.)
   (b) Do not tie knot of compress or cravat bandage over wound.

Problem 8 (Con.)

5. Wound on right elbow (compound fracture).
   (a) Apply bandages as for wound of elbow. (See p. 58 and fig. 23, C.)
   (b) Do not tie knot of compress or cravat over wound.

6. Wound on chest between shoulders.
   (a) Apply bandages as for wound of chest between shoulders. (See p. 64 and fig. 27.)

7. Wound on left hip.
   (a) Apply bandages as for wound of hip. (See p. 67 and fig. 30, A.)

8. Burns of face and ears.
   (a) Remove all loose clothing from burns.
   (b) Apply moistened picric-acid gauze to burns of face and ears.
   (c) Apply burn dressing to face and ears. (See p. 74 and fig. 33, A.)

9. Fracture of left foot (compound fracture).
   (a) Support fracture of left foot.
   (b) Apply padded splint and bandages as for fracture of foot. (See p. 103 and fig. 48.)

10. Fracture of right elbow (compound fracture).
   (a) Support fracture of elbow.
   (b) Apply padded splint and bandages as for fracture of elbow. (See p. 92 and fig. 42, A.)

11. Prepare for transportation.
   (a) Test stretcher.
   (b) Three men lift patient from the least injured side, and place patient on stretcher.
   (c) Elevate foot end of stretcher at least 6 inches.

Problem 9

Three minutes will be allowed for reading problem and assembling material.

A trackman, while making repairs to the track, fails to hear an oncoming locomotive and fails to get into a shelter hole, and the locomotive strikes the trackman. Upon examining the trackman the following injuries are observed: A compound fracture of the left forearm 5 inches below the elbow, with bright red blood spurting from a 3-inch wound on the left forearm; blood oozing from a 2-inch wound in the right groin; a simple fracture of the right hand; a wound on the back between the shoulders; and a wound of the right foot spurting bright red blood. Patient is unconscious and in a state of shock. Treat and transport 25 feet on stretcher, return to original position, and unload patient from stretcher.

Working time - 8 minutes.

List of injuries and treatment:

1. Arterial bleeding from wound on left forearm.
2. Arterial bleeding from wound on right foot.
3. Physical shock.
4. Wound on left forearm.
5. Wound on right foot.
6. Wound of right groin.
7. Wound on back between shoulders.
8. Fracture of left forearm (compound fracture).
9. Fracture of right hand.
10. 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. Arterial bleeding of right foot.
   (a) Apply digital pressure at back of knee or thigh pressure point.
   (b) Apply tourniquet at thigh pressure point.

3. Physical shock.
   (a) Head level with body.
   (b) Remove foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be applied.
   (f) Give tested stimulant by inhalation.

4. Wound on left forearm.
   (a) Apply bandages as for wound of forearm. (See p. 58 and fig. 23, B.)
   (b) Do not tie knot of compress or cravat bandage over wound.

5. Wound on right foot.
   (a) Apply bandages as for wound of foot. (See p. 69 and fig. 32, B.)

Problem 9 (Con.)

6. Wound of right groin.
   (a) Apply bandages as for wound of groin. (See p. 65 and fig. 23, B.)

7. Wound on back between shoulders.
   (a) Apply bandages as for wound of back between shoulders. (See p. 63 and fig. 26.)

8. Fracture of left forearm (compound fracture).
   (a) Support fracture of left forearm.
   (b) Apply padded splint and bandages as for fracture of forearm. (See p. 92 and fig. 42, A.)

9. Fracture of right hand.
   (a) Support fracture of right hand.
   (b) Apply padded splint and bandages as for fracture of hand. (See p. 94 and fig. 42, B.)

10. Transportation.
   (a) Test stretcher.
   (b) Lift patient, with three men lifting from the least injured side, and place patient on stretcher.
   (c) Carry stretcher 25 feet, and return to original position.
   (d) Unload patient from stretcher.

Problem 10

Three minutes will be allowed for reading problem and assembling material.

A lineman was putting a fuse in a power circuit at an elevated transformer station when he received an electrical shock and fell from the platform, receiving the following injuries: Wound of the right armpit, with severe bleeding; fracture of the left shoulder blade; a wound 6 inches in length spurting bright red blood on the inside of the left thigh midway between the crotch and the knee; fracture of three ribs on the left side of chest; extensive wounds on the scalp with slight bleeding; burns on both hands; a wound of the right groin; and a bad bruise of the right thigh. The patient remains conscious throughout the problem; however, he suffers from physical shock. Treat and transport 25 feet, and return to original position.

Working time - 8 minutes.

List of injuries and treatment:

1. Arterial bleeding of left thigh.
2. Physical shock.
3. Wound on inside of left thigh (6 inches long).
4. Wound of right armpit (severe bleeding).
5. Wound of right groin.
6. Extensive wounds of scalp.
7. Burns of both hands.
8. Bruise of right thigh.
9. Fracture of left shoulder blade.
10. Fracture of ribs (left side of chest).
11. Transportation.

Outline for Working Problem

1. Arterial bleeding from left thigh.
   (a) Apply digital pressure at thigh pressure point.
   (b) Apply tourniquet at thigh pressure point. (See p. 42.)

2. Physical shock.
   (a) Head level with body.
   (b) Remove foreign objects from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, waist, and chest.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be applied.
   (f) Give tested stimulant by mouth.
3. Wound on inside of left thigh (6 inches long).
   (a) Apply sterile gauze and cover dressing as for wound of thigh. (See p. 67 and fig. 30, B.)

4. Wound of right armpit (severe bleeding).
   (a) Apply bandages as for wound of armpit with severe bleeding. (See p. 57 and fig. 22, B.)
   (b) Place well-wrapped hard object over compress in armpit.

Problem 10 (Con.)

5. Wound of right groin.
   (a) Apply bandages as for wound of groin. (See p. 65 and fig. 28, B.)

6. Extensive wounds of scalp.
   (a) Apply bandages as for extensive wounds of scalp. (See p. 53 and fig. 19.)

7. Burns of both hands.
   (a) Remove all loose clothing from burns.
   (b) Place moistened picric-acid gauze over burned surface, and place picric-acid gauze between fingers. (See p. 76.)
   (c) Apply triangular bandages as for extensive wounds of the hand. (See p. 61 and fig. 25.)

8. Bruise of right thigh.
   (a) Apply cold applications.
   (b) Elevate injured member.

9. Fracture of left shoulder blade.
   (a) Need not be supported.
   (b) Apply dressing as for fracture of shoulder blade. (See p. 90 and fig. 41, A.)

10. Fracture of ribs (left side of chest).
   (a) Apply bandages as for fracture of rib. (See p. 94 and fig. 43.)

11. Transportation.
   (a) Test stretcher.
   (b) Lift patient on stretcher. Three men lift from least injured side.
   (c) Carry stretcher 25 feet and return to original position.
   (d) Elevate foot end of stretcher at least 6 inches.

Problem 11

Three minutes will be allowed for reading problem and assembling material.

A hand loader failed to set the brakes of a mine car at the working place, and the mine car squeezed the man at the working place. When the mine car was released from the victim, the following injuries were observed: A fracture of the pelvis; a compound fracture of the lower two-thirds of the right arm 3 inches above the elbow, with arterial bleeding; a wound on the left side of the neck, and a 6-inch wound on the left forearm. Patient is unconscious and suffering from physical shock throughout the problem. Treat and transport patient on stretcher 25 feet, return to original position, and unload patient from stretcher.

Working time - 7 minutes.

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List of injuries and treatment:

1. Arterial bleeding from wound on right arm.
2. Physical shock.
3. Wound on right arm.
4. Wound on left side of neck.
5. Wound on left forearm.
6. Fracture of right arm (compound).
7. Fracture of pelvis.
8. Transportation.

Outline for Working Problem

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

2. Physical shock.
   (a) Head should be level with body (when patient is placed on splint, foot end of splint should be elevated).
   (b) Remove all foreign bodies from mouth. See that tongue is forward.
   (c) Loosen tight clothing from neck, chest, and waist.
   (d) Cover patient with blanket after completion of dressings.
   (e) Tested heated objects may or may not be applied.
   (f) Give tested stimulant by inhalation.

3. Wound on right arm.
   (a) Apply bandages as for wound of arm.
   (b) Do not tie knot of compress or cravat bandages over wound. (See p. 58 and fig. 23, A.)

4. Wound on left side of neck.
   (a) Apply bandages as for wound of neck. (See p. 56.)

5. Wound on left forearm.
   (a) Apply bandages as for wound of forearm. (See p. 58 and fig. 23, B.)

Problem 11 (Con.)

6. Fracture of right arm (compound).
   (a) Support fracture of arm.
   (b) Apply padded splint.
   (c) Apply bandages as for fracture of lower two-thirds of arm. (See p. 92 and fig. 42, A.)

7. Fracture of pelvis.
   (a) Support pelvis until two wide bandages are tied.
   (b) Apply padded and tested splint or board.
   (c) Apply bandages as for fracture of pelvis. (See p. 100 and fig. 46.)

8. Transportation.
   (a) Test stretcher.
   (b) Lift patient on stretcher. Three men lift from the least injured side.
   (c) Carry stretcher 25 feet, and return to original position.
   (d) Unload patient from stretcher.
   (e) Elevate foot end of splint.

APPENDIX F: RULES GOVERNING NATIONAL FIRST-AID CONTEST, 1955

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 or team member.

3. If substitutes are on a team, they shall be placed in the stands or other place indicated by the chief judge.

4. Full team events only will be used.

5. Each team will perform 10 or more problems. This, 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 (1953 edition) is hereby authorized for sole reference and guidance in contest work at this meet.

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 marked first-aid boxes and equipment, or use of 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 of 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 waiting 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 minutes reading period.

18. In problems involving artificial respiration, 12 complete strokes of the Holger Nielsen (back-pressure arm-lift) method and 12 to 15 complete strokes for the Schafer and Silvester methods of artificial respiration will be given 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 wearing or using of a watch during the working of problems 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 of fractures or dislocations 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. If problem reads, "treat patient," stretcher does not have to be taken to the patient.

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 his shirt and waistband of his trousers completely fastened and his belt in place. Shoes shall be removed at the instruction of team captain during the 3-minute period.

(c) The three top buttons on shirt, belt, and top button of trousers must be open during shock treatment.

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

(e) Bandages must be applied over the team uniform worn by the patient.

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 shall be used in this contest. Unsterile compresses and cravat bandages may be used.

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

(d) Elevating devices shall not be used for tying splints together but can be used for elevation of stretchers; however, this shall prohibit the use of boxes for tying splints together.

(e) Splints shall not be padded or wrapped prior to the beginning of any problem requiring their use.

(f) Splints, boards, and stretchers must be tested separately.

(g) No prepared padding will be permitted; however, triangular bandages or any suitable material that is found in or around mines, mills, quarries, petroleum plants, etc., may be used for padding, provided that this material is cut or torn and folded during the working of the problem. Cravat bandages are considered prepared padding. Blankets used for padding splints shall be opened to full width.

(h) All materials except blankets, stretchers, and splints must be kept in boxes or kits until after the gong or whistle has been sounded to begin working of the problem.

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

Timing

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

(b) Three minutes will be allowed for reading problem. 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. The captain or other team member may change the position of the patient as required by the problem during the 3-minute reading of the problem.

(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 working the problem is completed.

(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 team will return to its base, count off, then the captain raises his right hand and announces his team number. The team remains at its post. (The problem will not be considered completed until this is done.)

(j) Teams will be allowed a definite period for removing bandages between problems or leaving the field - approximately 5 minutes.

Judging

(a) Each team as it performs a problem will be rated by a judge or judges. If 2 or more judges are used, 1 will act as a chairman and mark the scorecard.

(b) The judges will be members of the United States 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 scorecard and a copy of the problem, with an outline of the correct method of working the problem according to the Bureau of Mines Manual of First-Aid Instruction.

(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 inflicted, 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 scorecard and sign the card in the space provided for that purpose. Do not use check marks for discounts. For example, if a team incurred a 1-point discount twice, the scorecard 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 scorecards 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.

Scorecard Examiners

(a) At least two (2) 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 scorecards before they are turned over to the recorders.

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

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

(d) After the scorecard examiners have completed their work, the scorecards shall be turned over to the recorders.

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

Recording

(a) The recorders will tabulate the scores from the scorecards 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.

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 scorecard will be used, regardless of how many judges are used for judging 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.

Miscellaneous

(a) Broken neck: Support neck until fifth bandage is tied. Where slings are required, tie arms together of an unconscious patient for transportation. (See p. 20, fig. 7.)

(b) Crushed hand: If open wound is specified tourniquet loosely arm pressure point.

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

(d) Stretchers: Arm-type stretchers.

(e) Shock: Blanket must be used for shock treatments. Blanket must be placed on the patient after the completion of dressings.

(f) When a problem calls for a dressing for burns of the face, a dislocated or fractured jaw, neck or spine, or while the patient is lying face down, stimulants must be given only by inhalation whether the patient is conscious or unconscious.

(g) Use of stimulants: Either raise or turn head when giving liquid stimulants. Stimulants by inhalation must be given twice during working of problem and stimulants by mouth at least once.

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

(i) A tourniquet shall not be loosened unless the working time of the problem exceeds ten (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 the circulation.)

(j) Arching of a tourniquet is not required, but in no case shall a bandage or other first-aid dressing be applied so as to foul the tourniquet.

(k) Fracture of pelvis must be supported until the two wide bandages are tied.

(l) Dressings of burns of face, head, or neck as described on page 74 of the Manual shall not be construed to mean that small burns such as chin, cheek, etc. must be covered by the entire face dressing. Small burns should be dressed as regular wound dressings. The full dressing is applied where large areas of the face, head, and neck are involved.

(m) Rubbing of extremities to be done only in case of sunstroke.

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

Problem No. _____ Team No. _____

National First-Aid Contest

1955

NOTE

Teams shall not be discounted more than once for any 1 mistake in the same problem where such mistake may be discounted under more than 1 of the 15 sections of discounts.

Teams shall be additionally discounted for repetition of the same mistakes in the same problem; for example, 2 tight bandages, 4 points discount; 3 granny knots, 3 points discount, etc.

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

1. Artificial respiration:	Discount
(a) Not giving artificial respiration (in required cases)	40 _____
(b) Unnecessary delay in starting artificial respiration	8 _____
(c) Not removing patient from dangerous gas, roof, 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 in drowning case (each infraction)	2 _____
(f) Not placing patient in proper position (body, head, arm, etc.)	2 _____
(g) Not loosening tight clothing (neck, chest, and waistline) (each)	2 _____
(h) Not removing foreign substances from mouth	2 _____
(i) Not seeing that the tongue is in proper position	4 _____
(j) Incorrect method (prone method instead of back-pressure arm lift, Silvester instead of prone, etc.) (each man)	4 _____
(k) Incorrect position of operator causing insufficient respiration (each man)	4 _____
(l) Improper position of operator's hands (too high, too low, or too far apart, etc.) (each man)	2 _____
(m) Swinging too far forward when applying pressure (each man)	2 _____
(n) Bending elbows (back-pressure arm lift, prone method) (each man)	1 _____
(o) Not removing hands between applications to relieve pressure (each man)	1 _____
(p) Incorrect timing for each 2 seconds over or under 60 seconds in giving 12 complete strokes of the Holger-Nielsen method and 12 to 15 complete strokes for the Schafer and Silvester methods of artificial respiration (each infraction by each man)	1 _____
No. 1 man	_____
No. 2 man	_____
No. 3 man	_____
No. 4 man	_____
No. 5 man	_____
(q) Breaking rhythm when changing operators (each man)	2 _____
(r) Team member not giving artificial respiration when specified in problem (each man)	8 _____
(s) Use of watch, other timing devices, or signals from others while giving artificial respiration (each man)	4 _____
(t) Not placing pad under shoulder (Silvester method)	2 _____

2. 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	6 _____
(c) Unnecessary delay in applying digital pressure and/or tourniquet	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 (block not fully under band, not in right position, stick not anchored, etc.)	6 _____
(h) Not applying tourniquet loosely in compound fractures not having arterial bleeding (limbs only)	4 _____
(i) Tourniquet applied at wrong pressure point	4 _____
(j) Tourniquet applied to wrong limb (right for left or left for right)	6 _____
(k) Tourniquet applied so as to injure patient (pinching, not wrapping pad, etc.)	2 _____
(l) Binding or covering tourniquet with dressing (each)	2 _____
(m) Applying tourniquets so as to stop bleeding from wounds, simple fractures, and compound fractures not having arterial bleeding	4 _____
(n) Not elevating head (severe bleeding of head only)	2 _____
(o) Not loosening tourniquet at 10 minute intervals	2 _____
3. Physical shock and use of stimulants:	
(a) Not rendering any shock treatment in required cases	10 _____
(b) Unnecessary delay in starting shock treatment (treating wounds, dislocations, fracture, etc. before shock treatment)	4 _____
(c) Improper position of patient (head too high, etc.)	2 _____
(d) Not removing foreign substance from mouth	2 _____
(e) Not seeing that tongue is in proper position	2 _____
(f) Not loosening tight clothing at neck, chest and waistline (each infraction)	2 _____
(g) Not covering or improper covering of patient	2 _____
(h) Not giving stimulant in required cases	4 _____

		Discount	
(i)	Giving stimulant to patient having skull fracture, apoplexy, sunstroke, or internal bleeding	4	
(j)	Giving unconscious patient stimulant by mouth (each infraction)	4	
(k)	Giving stimulant by nose and not by mouth when patient is conscious (except patients with fractures of jaw, neck, or back and dislocated jaw) (each infraction)	2	
(l)	Giving stimulant before arterial bleeding is controlled	2	
(m)	Not testing stimulant before given by nose or mouth	2	
(n)	Not using or improper use of or not testing heat applications (each infraction)	2	
4. Wounds:			
(a)	Not applying any dressing for a wound	10	
(b)	Not being aseptic (each infraction even if same wound)	6	
(c)	Not using sterile compress or sterile gauze	4	
(d)	Compress or gauze improperly applied (wound not entirely covered, wrong location, method, or position of knot, etc.) (each)	2	
(e)	Tight or loose compress (each)	2	
(f)	Insecure, incomplete, or granny knot (compress only) (each)	1	
(g)	Lack of neatness (compress only)	1	
5. 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, etc.)	4	
(d)	Not placing picric-acid gauze between fingers, toes, back of ears, etc. (each omission)	2	
(e)	Not moistening or not indicating that picric-acid gauze is moist	2	
(f)	Applying picric-acid gauze too tight (each piece)	2	
(g)	Not removing or indicating removal of clothing from burned or scalded area	2	
6. Bruises, strains, and sprains:			
(a)	Not rendering any treatment for a bruise, strain, or sprain (each infraction)	4	
(b)	Failure to apply cold applications or elevate bruises (when practical) (each infraction)	2	

		Discount
(c)	Failure to apply hot applications and massage strain (each) ...	2 _____
(d)	Failure to bind and elevate sprain (when practical) (each infraction)	2 _____
(e)	Removing shoe and/or not loosening shoelace (each infraction) .	2 _____
(f)	Failure to apply cold applications then heat applications to sprains (each infraction)	2 _____

7. Fractures:

(a)	Not treating fracture of skull, spine, neck, pelvis, or thigh (each)	12 _____
(b)	Not treating fractures other than (a) (each)	10 _____
(c)	Not elevating head of patient with a fracture of skull	4 _____
(d)	Applying cold application to fracture of skull over open wound, before applying dressing	2 _____
(e)	Not straightening or improper straightening of fractured limb .	2 _____
(f)	Not supporting or improper support of fracture	4 _____
(g)	Hands in wrong position, or attempting to control arterial bleeding while supporting fracture	4 _____
(h)	Failure to place pad under knot in required cases (each infraction)	1 _____
(i)	Improper lifting or lowering patient for applying splints (wrong side, etc.)	2 _____
(j)	Placing wedge between teeth in fracture of lower jaw	2 _____

8. Dislocations:

(a)	Not reducing or treating dislocations of lower jaw, fingers, or toes (each)	8 _____
(b)	Not treating dislocations other than (a) (each)	6 _____
(c)	Not placing wedge between teeth (dislocated jaw)	2 _____
(d)	Not placing limb in proper position for treatment	4 _____
(e)	Not supporting dislocations	4 _____
(f)	Improper lifting or lowering of patient for applying splints (wrong side, etc.)	2 _____
(g)	Failure to place pad under knot in required cases (each infraction)	1 _____

		Discount
9.	Application of splints and padding:	
(a)	Improper splint ("L" splint instead of straight splint, or the reverse, cleats, marks, length, width, etc.)	4 ____
(b)	Splint improperly applied (too high, too low, etc.)	2 ____
(c)	Use of prepared padding (prefolded bandages, compresses, gauze, blanket, or previously padded splint) (each infraction)	2 ____
(d)	Improper or insufficient padding. No arch placed where compound fractures contact splint (each)	4 ____
(e)	Failure to place pad under knot in required cases (each infraction)	1 ____
(f)	Failure to test splint used in dislocated hip, and fracture of neck, spine, or pelvis	4 ____
(g)	Failure to pad under natural arches of body (each)	2 ____
(h)	Lack of neatness	1 ____
(i)	Use of prepared material other than cravat bandages to hold padding on splints (rubber bands, etc.) (each infraction) ..	2 ____
10.	Application of cravat or triangular bandages:	
(a)	Not using cravat or triangular bandage in required cases (wounds, burns, fractures, dislocations, tying arms of unconscious person for transportation, etc.) or not using sufficient 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	2 ____
(g)	Insecure, incomplete, or granny knot (bandages only) (each)...	1 ____
(h)	Lack of neatness	1 ____
11.	Rupture:	
(a)	Not rendering any treatment	4 ____
(b)	Improper position of patient (knees not raised and held in place by padding and bandages when practical)	4 ____
(c)	Failure to apply cold applications	1 ____
12.	Poisons, apoplexy, and snakebite:	
(a)	Failure to render any treatment	8 ____
(b)	Not applying constricting bandage in snakebite	8 ____

		Discount
(c)	Failure to loosen constricting bandage for 1 minute after bleeding of wound for 20 minutes	2 ____
(d)	Not elevating head of patient having apoplexy	2 ____
(e)	Incomplete treatment (each omission)	2 ____
13.	Fainting, sunstroke, heat exhaustion, frostbite and freezing:	
(a)	Failure to render any treatment	6 ____
(b)	Improper position of patient (head, body, etc.)	4 ____
(c)	Incomplete treatment (each omission)	2 ____
(d)	Applying heated objects or covering patient with blanket before reducing body temperature in sunstroke (each infraction)	2 ____
(e)	Not rubbing extremities	2 ____
14.	Transportation, lifting, lowering:	
(a)	Not testing stretcher	4 ____
(b)	Not loading patient in required cases	4 ____
(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 ____
(l)	Not elevating foot end of stretcher	1 ____
15.	General:	
(a)	Treating wrong condition (dislocation for fracture, sunstroke for heat exhaustion, etc.) (each)	4 ____
(b)	Treating wrong location of injury (wrong side of body, arm for forearm, thigh for leg, etc.) (each)	2 ____
(c)	Not treating injuries in their proper order (most severe one first, etc.) (each)	2 ____
(d)	Not taking sufficient material to complete problem (each trip back)	2 ____

		Discount
(e)	Assistance lent by patient (physical or verbal) (each time) ...	2 _____
(f)	Rough, awkward, or unnecessary handling of patient (each infraction)	4 _____
(g)	Slowness in work (each minute or fraction overtime)	1 _____
(h)	Use of rubber bands or similar devices on the patient's arms, legs, and splints is prohibited	2 _____
(i)	Violation of, or failure to observe rules	2 _____
	TOTAL	500

Total discounts _____ Total credits _____

Recorder _____ Judges _____

_____

_____

APPENDIX H: PRIZE WINNERS IN MINE RESCUE, FIRST-AID AND COMBINATION CONTESTS

	Winner	Prize	Donor
		Mine Rescue contest	
First place	Team No. 3 Captain, Douglas Damron Consolidation Coal Co. (Ky.) Hendrix mine Jenkins, Ky.	Congressional medallion Team trophy and individual mementos State banner Coal Age trophy Engraved plaque Individual trophies Trophy for Kentucky champions	Congress of the United States. Mine Safety Appliances Co. Kentucky Dept. of Mines and Minerals. Coal Age Magazine. Kentucky Mining Institute. Post No. 2, National Mine Rescue Association. Kentucky River Coal Corp.
Second place	Team No. 7 Captain, J. P. Gibson Inland Steel Co. Price mine Wheelwright, Ky.	Team trophy and individual mementos	United Mine Workers of America.
Third place	Team No. 5 Captain, R. P. Hightower International Harvester Co. Wisconsin Steel Coal mine No. 2 Benham, Ky.	Team trophy and individual mementos	National Coal Association.
Fourth place	Team No. 8 Captain, Fred Rice Peabody Coal Co. Mine No. 10 Pawnee, Illinois	State banner Ash trays Travel clocks Dressing set (to captain)	Illinois Dept. of Mines and Minerals. American Pulverizer Co. Eureka Casualty Co. Stearns Magnetic Co.
Fifth place	Team No. 4 Captain, Ted Hollin U. S. Steel Corp. No. 31 - No. 32 Mines Lynch, Ky.	Flashlights	Joy Manufacturing Co.
Sixth place	Team No. 9 Captain, Pete Yadamec U. S. Steel Corp. Frick District mines Uniontown, Pa.	Cigarette lighters and watch fobs	Oliver Corp.
		First-aid contest	
First place	Team No. 10 Captain, John Dickenson U. S. Steel Corp. Gary District mines Gary, W. Va.	Congressional medallion Team trophy and individual mementos First-aid kits Coal Age trophy Inscribed billfolds	Congress of the United States. United Mine Workers of America. Mine Safety Appliances Co. Coal Age Magazine. Old Republic Insurance Co.
Second place	Team No. 53 Captain, J. Ray St. Clair U. S. Steel Corp. Palmer Mine Uniontown, Pa.	Team trophy and individual mementos First-aid kits	National Coal Association Mine Safety Appliances Co.
Third place	Team No. 18 Captain, Robert Long U. S. Steel Corp. Gary District mines Gary, W. Va.	Team trophy and individual mementos First-aid kits	Mine Safety Appliances Co. Do.
Fourth place	Team No. 11 Captain, William DeLucas Hanna Coal Co. Georgetown No. 12 mine Adena, Ohio	Fountain-pen and pencil sets Ash trays	Bituminous Casualty Co. American Pulverizer Co.
Fifth place	Team No. 15 Captain, Joseph Hebda Mathies Coal Co. Mathies mine Finleyville, Pa.	Automobile suitcases	Cardox Corp.
Sixth place	Team No. 26 Captain, Andrew Janosky Hanna Coal Co. Piney Fork No. 1 mine Piney Fork, Ohio	10-unit first-aid kits	National Mine Service Co.
Seventh place	Team No. 36 Captain, John McCulloch South Union Coal Co. Jamison No. 11 mine Edna, W. Va.	Cigarette lighters	Ohio Brass Co.

APPENDIX H: PRIZE WINNERS IN MINE RESCUE, FIRST-AID, AND COMBINATION CONTESTS (Con.)

Winner		Prize	Donor
		First-aid contest (Con.)	
Eighth place	Team No. 10 Captain, Howard Shepherd Warner Collieries Co. Jensie mine E. Springfield, Ohio	Leather secretaries	Cincinnati Mine & Machinery Co.
Ninth place	Team No. 28 Captain, Dale See Compass Coal Co. No. 1 Division Philippi, W. Va.	Cigarette lighters	Anonymous.
Tenth place	Team No. 25 Captain, George Truax Renton Coal Co. Renton mine Renton, Pa.	Engraved cigarette lighters	General Reinsurance Co.
Eleventh place	Team No. 40 Captain, Walter Williamson Blue Diamond Coal Co. No. 1 mine Blue Diamond, Ky.	Engraved plaque Trophy State banner Cigarette lighters	Kentucky Mining Institute. Kentucky River Coal Corp. Kentucky Dept. of Mines and Minerals. Gould-National Batteries, Inc.
Twelfth place	Team No. 24 Captain, Lowell H. Kelly Consolidation Coal Co. Consolidation No. 32 mine Owings, W. Va.	Pocket knives	Guyan Machinery Co.
Thirteenth place	Team No. 50 Captain, Ernest Moore Eastern Gas & Fuel Associates Keystone mine Keystone, W. Va.	Cigarette lighters	Caterpillar Tractor Co.
Fourteenth place	Team No. 7 Captain, Lewis Akers Consolidation Coal Co. Consolidation No. 32 mine Owings, W. Va.	Pen and pencil sets	Oliver Corp.
Fifteenth place	Team No. 20 Captain, E. F. Robinson Turner Elkhorn Mining Co. Liberty mine Drift, Ky.	Pens	Ashland Oil & Refining Co.
Forty-first place	Team No. 17 Captain, Olen Bell Tennessee Copper Co. Mines and Surface Copperhill, Tenn.	State banner	Tennessee Division of Mines.
Fifty-fourth place	Team No. 32 Captain, Willie Weston Republic Steel Corp. Sayreton mine Sayreton, Ala.	do.	Alabama Department of Labor.
		Combination contest	
First place	Team No. 31 in first-aid contest Team No. 1 in mine rescue contest Captain, John Douglas Hanna Coal Co. Glen Castle No. 6 mine Adena, Ohio	Team trophy and individual mementos	National Coal Association.
Second place	Team No. 6 in first-aid contest Team No. 2 in mine rescue contest Captain, Arthur Bedwell Snow Hill Coal Corp. Green Valley mine Terre Haute, Ind.	do.	Mine Safety Appliances Co.

APPENDIX I: STATES AND ORGANIZATIONS REPRESENTED AT CONTEST

Alabama Department of Industrial Relations
American National Red Cross
American Zinc Co. of Tennessee
Barnes-Dawson Coal Co.
Bethlehem Collieries Corp.
Big Sandy-Elkhorn Mining Institute
Bituminous Casualty Co.
Bituminous Coal Operators Association
Blue Diamond Coal Co.
Central West Virginia Coal Mining Institute
Coal Age
Consolidation Coal Co. (Ky.)
Cornett-Lewis Coal Co.

Eastern Gas & Electric Co.
Eastern Gas & Fuel Associates
Eureka Casualty Co.
Hanna Coal Co.
Harlan County Coal Operators Association
Harlan County Mining Institute
Hulbert Oil and Grease Co.
Illinois Department of Mines and Minerals
Imperial Cantrell Manufacturing Co.
Imperial Coal Co.
Indiana Bureau of Mines and Mining

International Harvester Co.
Johnston-Morehouse-Dickey Co.
Kennametal, Inc.
Kentucky Department of Mines and Minerals
Kentucky River Mining Institute
Lynch Coal Operators Reciprocal Association
Mine Safety Appliances Co.
National Coal Association
New Jersey Department of Labor
Ohio Brass Co.
Ohio Division of Mines
Oklahoma Department of Mines
Pardee & Curtin Lumber Co.
Peabody Coal Co.
Pennsylvania Department of Mines
Pittsburgh Coal Co.
Pittsburgh Consolidation Coal Co.
Pocahontas Fuel Co., Inc.
Renton Coal Co.
Snow Hill Coal Corp.
Southern Appalachian Coal Operators Association
Southern Coal Producers Association
Stonega Coke & Coal Co.
Tennessee Copper Co.
Tennessee Division of Mines
Tennessee Valley Authority
Truax-Traer Coal Co.
Underwriters Safety and Claims
United Mine Workers of America, International, and Districts 4, 11, 19, 29, 31, and 50.
United States Department of the Interior
United States Department of Labor
United States Steel Corp.
Virginia Division of Mines
Warner Collieries Co.
West Virginia Coal Association
West Virginia Coal Mining Institute
West Virginia Department of Mines

APPENDIX J: MEMBERS OF NATIONAL FIRST-AID AND MINE RESCUE CONTEST COMMITTEE, 1955

Office	Name	Title and organization	Address
General chairman	Forbes, J. J.	Director, Bureau of Mines	Washington, D. C.
Coordinating chairman	Schuler, L. W.	Assistant to safety director, United Mine Workers of America	Do.
Assistant chairman	Walker, W. Dan, Jr.	District supervisor, Bureau of Mines	Pittsburgh, Pa.
Advisors to general chairman	Dunz, Harry J.	Chief, Ohio Division of Mines	Columbus, Ohio.
	Kelly, C. P.	Chief inspector, Virginia Division of Mines	Big Stone Gap, Va.
	McKenna, J. V.	Acting deputy secretary, Pennsylvania Department of Mines	Harrisburg, Pa.
	Miller, J. R.	Chief, Tennessee Division of Mines	Knoxville, Tenn.
	Olzer, J. C.	Chief, West Virginia Department of Mines	Charleston, W. Va.
	Purcell, C. A.	Director, Indiana Bureau of Mines and Mining	Terre Haute, Ind.
	Schull, B. H.	Director, Illinois Department of Mines and Minerals	Springfield, Ill.
	Sisk, A. D.	Chief, Kentucky Department of Mines and Minerals	Lexington, Ky.
	Westfield, James	Assistant Director, Health and Safety, Bureau of Mines	Washington, D. C.
	Williams, H. T.	Chief, Safety and Inspection, Department of Industrial Relations	Birmingham, Ala.
Secretary	Weaver, H. F.	Chief, Division of Coal Mine Inspection, Bureau of Mines	Washington, D. C.
Acting secretary	Tomlinson, W. H.	Training administration officer, Bureau of Mines	Pittsburgh, Pa.
Treasurer	Norcross, Robert	West Virginia Coal Association	Charleston, W. Va.
Announcer	Tomlinson, W. H.	Training administration officer, Bureau of Mines	Pittsburgh, Pa.
Arrangements Committee	Warncke, R. G. (chairman)	Mining engineer, Bureau of Mines	Washington, D. C.
	Benson, J. B.	Director of Safety, Southern Coal Producers Association	Do.
	Ferguson, Charles	Safety director, United Mine Workers of America	Washington, D. C.
	Gandy, Harry Jr.	Director, Department of Safety, National Coal Association	Do.
	Homan, Harry S.	Executive secretary, Southern Appalachian Coal Operators Association	Knoxville, Tenn.
	Miller, J. R.	Chief, Tennessee Division of Mines	Do.
	Pass, Albert	Secretary-treasurer, District 19, United Mine Workers of America	Middlesboro, Ky.
Grounds Committee	Tomlinson, W. H. (chairman)	Training administration officer, Bureau of Mines	Pittsburgh, Pa.
	Austin, Louis	International Executive Board member, District 11, United Mine Workers of America	Terre Haute, Ind.
	Dickson, Robert	Secretary, Kentucky River Mining Institute	Hazard, Ky.
	Freas, George L.	Mechanical engineer, Bureau of Mines	Pittsburgh, Pa.
	Morgan, Osborne	Lehigh Valley Coal Co.	Wilkes-Barre, Pa.
Finance Committee	Spindler, G. R. (chairman)	Director, School of Mines, West Virginia University	Morgantown, W. Va.
	Batman, H. T.	General manager and counsel, Lynch Coal Operators Reciprocal Association	Terre Haute, Ind.
	Currie, R. D.	Engineer, General Reinsurance Corp.	Trucksville, Pa.
	Deringer, B. W.	Labor commissioner, Central Pennsylvania Coal Producers Association	Altoona, Pa.
	Dickson, Robert	Secretary, Kentucky River Mining Institute	Hazard, Ky.
	Grafton, H. J	Chief mining engineer, Eureka Casualty Co.	Philadelphia, Pa.
	Herbert, C. F.	Superintendent, Safety Engineering Department, Bituminous Casualty Corp.	Rock Island, Ill.
	Moody, J. E.	President, Southern Coal Producers Association	Washington, D. C.
	Sampson, Ford	Executive secretary, Ohio Coal Association	Bridgeport, Ohio

APPENDIX J: MEMBERS OF NATIONAL FIRST-AID AND MINE RESCUE CONTEST COMMITTEE, 1955 (Con.)

Office	Name	Title and organization	Address
Prize Committee	Roll, W. H. (chairman)	Executive assistant, Kentucky Department of Mines and Minerals	Lexington, Ky.
	Batman, H. T.	General manager and counsel, Lynch Coal Operators Reciprocal Association	Terre Haute, Ind.
	Busarello, John	President, District 5, United Mine Workers of America	Pittsburgh, Pa.
	Currie, R. D.	Engineer, General Reinsurance Corp.	Trucksville, Pa.
	Donahue, C. M.	Vice president, Mine Safety Appliances Co.	Pittsburgh, Pa.
	Ferguson, Charles	Safety director, United Mine Workers of America	Washington, D. C.
	Gandy, Harry, Jr.	Director, Department of Safety, National Coal Association	Do.
	Grafton, H. J.	Chief mining engineer, Eureka Casualty Co.	Philadelphia, Pa.
	Herbert, C. F.	Superintendent, Safety Engineering Department, Bituminous Casualty Corp.	Rock Island, Ill.
Rules Committee	Burdelsky, H. R. (chairman)	Safety representative, Bureau of Mines	Pittsburgh, Pa.
	Berry, J. V.	Supervisor of safety, Bethlehem Collieries Corp.	Johnstown, Pa.
	Bloomer, Bart B.	Safety director, District 30, United Mine Workers of America	Lexington, Ky.
	Johnson, L. H.	Safety engineer, Peabody Coal Co.	Taylorville, Ill.
	Jones, C. E.	Safety engineer, District 29, United Mine Workers of America	Beckley, W. Va.
	Kirk, Nathaniel	Superintendent, Green Valley Mine, Snow Hill Coal Corp.	Terre Haute, Ind.
	McKenna, J. V.	Acting deputy secretary, Pennsylvania Department of Mines	Harrisburg, Pa.
	Mosgrove, Jed	Safety director, Big Sandy-Elkhorn Mining Institute	Pikeville, Ky.
	Schuster, W. J.	Safety director, Hanna Coal Co.	Adena, Ohio.
Publicity Committee	Nicolai, E. R. (chairman)	Assistant chief, Office of Mineral Reports	Washington, D. C.
	Ankeny, M. J.	Safety director, Bituminous Coal Operators Association	Do.
	Benson, J. B.	Director of safety, Southern Coal Producers Association	Do.
	Gandy, Harry, Jr.	Director, Department of Safety, National Coal Association	Do.
	Kaczinski, Charles	Safety director, District 1, United Mine Workers of America	Wilkes-Barre, Pa.
	MacMurphy, A. B.	Chief, Current Affairs Section, Bureau of Mines	Washington, D. C.
	McCarthy, Justin	Editor, United Mine Workers Journal	Do.
	Swenarton, R. O.	Information specialist, Office of Mineral Reports, Bureau of Mines	Do.
Program Committee	Fene, W. J. (chairman)	Chief, Division of Safety, Bureau of Mines	Do.
	Ferguson, Charles	Safety director, United Mine Workers of America	Do.
	Gandy, Harry, Jr.	Director, Department of Safety, National Coal Association	Do.
	Tomlinson, W. H.	Training administration officer, Bureau of Mines	Pittsburgh, Pa.

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