SIDELINES

By EUGENE WORCESTER

"HISTORY REPEATS itself." So goes the saying, and there is considerable evidence to support it. A glance into the Orient presents a situation remarkably like that in Eastern Europe over a century ago. Napoleon Bonaparte, Europe's Alexander, still unsatisfied with possession of the continental capitals, enviously looked on Russia's broad plains and seemingly endless forests. But his avidness for indisputable supremacy surpassed his means and ability to achieve it. His huge army steamrollered across the White Russian borders in farmer fashion. But progress was slow for lack of roads. His army, miles from a base, had to live on the fat of the land. Summer passed and autumn with it, and still his objective of Moscow was unattained. With the arrival of winter Napoleon was left with burned towns, barren fields and the Siberian blasts. Even before the advancing French, the retreating Russians destroyed all that might offer food or supply to the invaders. History records that the little Corsican found a conflagrated Moscow, and returned to Paris disconsolate and defeated.

THE CHINESE are using tactics against their Japanese invaders identical with those practiced by their Russian neighbors years ago. Hankow, the latest Nipponese seizure, was a prosperous city a few short weeks ago. The Chinese in Hankow, realizing that the city would fall prey to the Emperor's sons, cooperated with the army and destroyed or removed everything of value in the metropolis. Factories and industrial plants were dynamited. Power stations and oil stores were ruined and burned. The Chinese have determined that their invaders shall not be rewarded. Japanese capital stands small opportunity to yield return from a mass of smoldering ruins and a boycotting populace.

JUST WHAT Japan will gain from her exploits is questionable. She has, to date, buried upwards of 30,000 of her sons. She is finding war and the maintenance of an army very expensive. Chinese guerrilla warfare tactics are not helpful to healthy military morale in Japanese ranks. She is decidedly unpopular with the people of the world, although her stock is quoted considerably higher with her Fascist colleagues. History has consistently shown that no one has ever conquered China, but that her would-be conquerors have all been absorbed. Chinese culture, centuries old, and based on principles sound and extremely simple, has in the past resisted and defended itself against the pressure of an unhappy, aggressive, and profit-maddened world. In spite of "the schemes of mice" and a few men in Tokyo, Rome, and Berlin, she will continue in her culture when these mice are dead and forgotten.

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A London experimentalist has developed, quite recently, a method for photographing the fragrance of a lily or the intense odor of camphor. It was well he stayed from Jersey City, or his negatives would spoil with the present stench of her municipal government. Frank Hague, whose present term expires in 1941, has been her honorable mayor since 1917. He has, in the 21 years of his office, made Jersey City the country's outstanding example of undemocratic government. Opposition has been quelled (but not eliminated as yet) by refusal for free expression of speech or press. Court procedures are mere formalities. Public meetings for others than Hague's party are forbidden on the ground that they disturb the peace. Hague's privately financed mobs of ruffians have broken up previous opposition party meetings, and brought on the alleged peace disturbance. Hague proclaims a doctrine of Jersey City for industry (and, it might be added, for Hague). When a city official receives a nominal salary of ten thousand a year, and then buys an estate, supports a coterie of satellitic henchmen (or better, a private little army), and permits and causes continued rank denials of the fundamentals of the Bill of Rights, it would be well that outside pressure were brought to bear on his little fascist empire of Jersey City by those interested in keeping America a democracy.

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THE AMERICAN Legion recently made the discovery that Madame Perkins, Secretary of Labor, is a red. The *Tribune* has further scooped the Dies Committee reports that Roosevelt, the New Dealers and all labor chiefs are radicals and communists. In reply it might be said that were this true, our United States would be a communistic government. It is not, by a long shot. The harshest critics of the administration, the industrialists, are ungratefully biting the hand that feeds them. When the banks and industrialists were sick in 1933, Roosevelt came to their aid. Largely due to his policy they have regained health and now they turn from him. With due reserve, it can be said the country was very close to revolution in 1932. Twelve million unemployed people is a dangerous element in a country rich in resources, but handicapped with selfish vested interests. Roosevelt is trying hard to solder up the leaky pail of American capitalism, but it is a difficult task when his support looks for ephemeral fame instead of using foresight for a planned future. Little wonder the pail is leaking all around him.

Planetarium Math Show of Interest

Sophomores who have trouble solving problems in calculus, and students who appreciate clever handicraft will profit by a visit to the Fall Mathematics Exhibit at the Adler Planetarium. Morton Junior college and the Gary Public schools are sponsoring this exhibit.

One model made by Morton Junior college, is in the form of a diorama illustrating the speed of separation of a man walking over a bridge and a boat passing beneath.

A second set of models illustrates the meaning of each step in evaluating a triple integral, used to find volumes of solids. This set shows unusually clever workmanship. Another set of models consists of solids suspended in midair, while back of them are two dimensional drawings of the solids with a complete algebraic solution for finding their volume.

There are models which illustrate the problem of determining the number of stories a skyscraper should contain to yield maximum income.

Other models illustrate hyperboloid gears, select the path of a ditch dug for minimum expense through ground of varying degrees of hardness, find the maximum length of a thin rod passing through two corridors at right angles to each other.

Announce Complete Cast for Players in Latest Production

Casting has been completed for the first of the present season's plays, "Journey's End," to be produced by the Armour Players. The rehearsals are being held in the English rooms on the third floor of the Physics Building. At the present time, the cast is finishing the first act.

The cast has been tentatively set as:

Osborne	C. McAleer
Stanhope	B. R. Sternfeld
Raleigh	R. U. Rayninhus
Hibbert	J. Duncan
Mason	T. Hunter
Hardy	R. I. Jaffee
Trotter	L. Epstein
Colonel	A. Hansen
Sergeant Major	S. S. Silverman
Prisoner	R. Hanneman

Journey's End, a 3 act play, is well known to the students of Armour as it is required reading in the present freshman English. It will be presented on or about Jan. 5.

Through the effort and leadership of Mr. Christophersen, the Armour players were organized early in the semester. This year the membership has been opened to all men including the night school students. By this means, a large membership has been obtained as well as many experienced men. The members are divided into groups, by choice, for the handling of properties, costumes, publicity and stage management.

Many plays of interest to the student body are being considered for production during the winter months.

Discussion of the Uses of X-Rays is Topic for A.I.E.E.

Armour's branch of the A.I.E.E. presented Mr. H. T. Trenary of General Electric on "Industrial Uses of X-Ray Equipment" in the electrical lecture room last Friday morning.

Roentgen in 1892 discovered these hitherto unknown x-rays that could penetrate wood and paper. In 1930 x-ray testing of boiler was officially required by the navy. Later it was required in the inspection by the American Petroleum Industry of its boilers. At the present time the X-Ray equipment has been developed to penetrate steel plate five inches in thickness. For thickness greater than five inches, radium is used as the penetrating medium.

The ability of x-rays to penetrate is proportional to the density of the material. Since platinum is most dense, it should be used as protection from x-rays, however, the cost is so tremendous as to make it prohibitive. Schematic diagrams showing the use of x-ray equipment was shown. Recent developments include immersion of the x-ray tube to protect the operator and eliminate the necessity of correction for humidity and altitude changes. Any small difference in density is immediately recorded on a permanent record. This property is valuable in determining correct procedure in metal casting, since if there are no imperfections the pictures will be shown without flaws.

The x-ray is the only method of determining quality of production without destroying the piece. In this way the fruit growers were able to save $5,000,000 by inspecting the orange crop which was partially spoiled by a sudden cold snap. The equipment was able to inspect 17,000-20,000 oranges per hour rejecting all unfit fruit.

Last Wednesday evening 72 A.I.E.E. members enjoyed their annual smoker held in Science Hall and the second floor electrical laboratory. L. Strocchia took honors in the games, while Dr. Reed gave an interesting talk concerning his own personal experiences in the field of electrical engineering.

Chemicals Witness Motion Picture on 'Eagle White Lead'

Last Friday morning, the members of the A.I.Ch.E. witnessed a motion picture, "The Story of White Lead," describing the manner in which white lead is produced commercially. The movies were shown by Mr. R. Flood of the Eagle-Pitcher Lead Co.

Methods of mining the lead in the form of galena, a mixture of lead and lead sulphide, were first shown. The ore is then crushed and passed over a series of jigs whose purpose is to remove all stones which are present in the mined ore. The ore is passed to the furnaces, where the lead is purified and cast in bars for storage and transportation.

Before it is used in the manufacture of white lead, the lead is first cast in the form of thin metal disks, called buckles. The actual change from lead to white lead takes place in long corroding houses. Tanbark, the bark of oak trees, is spread over the floor, and pots, filled to one third of their capacity with a 3% solution of acetic acid, are placed on top of the tanbark. The lead buckles are then inserted into the pots so as to be directly above the vapor of the solution. A flooring, with openings for ventilation, is placed over the entire layer, and another layer is built up. This is continued until the entire corroding house is filled. The tanbark, which generates heat and carbon dioxide, acts with the acid to corrode the lead and form white lead.

This, the Old Dutch process is complete in about ninety days when 70% of the lead has been corroded.

The pots are removed and the white lead, formed in the operation, is crushed and screened to remove any unchanged lead. The finely ground white lead is then suspended in water and drained off into settling tanks. Water is drained off, and the settled lead is mixed with pure linseed oil and a small amount of turpentine. This mixture is further ground and then put up into containers. The movie was concluded with a short description of the uses and values of the finished product.

New Department of Educational Testing Determining Best Combine of Frosh Tests

Armour Institute created this year a new department of Educational Tests and Measurements, so as to centralize all the purely educational work in one department. New offices for the testing office and workrooms are located on the third floor of the Physics Building.

There was a change in two of the freshman orientation tests this year. The psychological examination was changed to adapt it better to machine scoring, and at the same time a sixth part was added on number series. The test can now be divided into two parts. One part contains arithmetic, analogies and number series. This part called Q is heavily loaded in quantitative thinking. The second part, containing word completion, artificial language and opposites, is heavily loaded in verbal traits such as verbal fluency and verbal deduction. This part is called I. As soon as the February grades are in, investigations will be started to see if the new arrangement has better predictive value than the old.

The fifth test, general science, which was taken by the last two classes was always regarded as an experimental test. It has been replaced this year by a series of short tests on visualization. Research work by Professor Thurston of the University of Chicago seems to indicate that the ability to see in three dimensional space can be measured by a test in space of two dimensions. It is known that ability to visualize three dimensional objects is one of the essential characteristics of a design engineer, and probably of other kinds of engineering also.

In the original battery of tests it was hoped to get at least one test which correlated very low with the other tests when taken by engineering students. The science test did not correlate as low as was expected, but it did fulfill other objectives. Next year another test may be tried. Evenually a battery of tests will be selected which will operate most efficiently with a minimum number of tests.

Vocational Interest tests are still being taken by students and by persons outside of the Institute. So many requests came from women that the women's vocational interest test is now being given.

Many people have the wrong impression that these vocational interest tests measure the interest that one has in a particular occupation. This is not true. For instance, engineers possess certain likes and dislikes, not connected with engineering- to quite a different degree than the public in general do. What that means is that from the standpoints of these likes and dislikes all engineers look very much alike and not like folks in the world in general.

It is hard to give a perfect comparison with more familiar objects, but this illustration might do. If one sees a man dressed in soldiers' clothes walking down the street, he says "There goes a soldier." In general he is right. Furthermore the chances are that such a man likes to be a soldier and is happy in his work. Occasionally this statement is not true. If a person sees an actor dressed as a soldier on the stage, it does not follow that the actor likes to be a soldier. That is to say it requires more than the possession of characteristic interests to be an engineer. Some of the things that are necessary are aptitude and personality. Strong however has found that people who do not have character-interests that characterized a profession rarely make a success of that profession. Which means in terms of the soldier analogy that if one sees a man on the street not dressed in soldier's clothes, the probabilities are that he is not a soldier and would not care to be one.

Some of the other work the educational testing office is doing is an

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Fire Protects Hear Lecture by Abel Gent

At the regular bi-weekly meeting of the F.P.E.S., held in room A, Main last Friday, the fire protects heard Mr. Abel Gent speak on "Town Classification." The speaker outlined the points which are of prime importance in giving towns their fire-protection grading and showed how these points are checked over and evaluated. Mr. Gent is a graduate of the fire protection engineering department, and is now with the Illinois Inspection Bureau.

Town grading is one of the most important functions of an inspection bureau, since the state bureaus rate all towns in their state which have less than 20,000 population. The number of such towns is quite large, and since they are all regraded at least every six years there is a large amount of work involved. Town grading is of great important because one of the first steps in rating any piece of property, for fire insurance purposes, is to determine the class of the town in which the property is located.

Water Supply Important

The most important consideration in grading a town is the public water supply. Next in importance are the fire department, and the public fire alarm system. In addition to these three, the public ordinances for building construction, storage of materials, and maintenance of electrical equipment are carefully considered.

Actual inspection of fire equipment is usually carried out to insure that the pumpers and engines are capable of throwing an adequate fire stream when needed. The water supply is carefully inspected as to size and condition of the pipes, pressure at hydrants, spacing of hydrants, and condition of the pumping station equipment. Water throwing tests for both fire equipment and water supply are run, using pitot tubes and other calibration devices to measure nozzle stream pressures, engine revolutions, etc.

State Bureau Approves Rates

When a town has been inspected by the bureau representatives, their findings are compiled in a detailed report and a rating is given. A letter of recommendation is sent to the town officials and suggestions are made for improving the classification of the town, and thereby reducing fire insurance rates. When a town makes any such improvements the proposed changes are submitted to the state inspection bureau for approval.

Another of the functions which an inspection bureau has is the testing of new fire fighting apparatus prior to its acceptance by a city or town. Tests are run for a three hour period at pressures up to 250 pounds per square inch.

In recent years many states have been following the practice of conducting a state fire college for firemen each year.

A.S.M.E. MEETING—

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versity while inventor Land was a student at that institution. Attracted and interested by Land's early experiments, Wheelwright suggested the Land-Wheelwright Laboratories. That partnership with a student who was to be regarded by his contemporaries as a genius within the next three years was the basis of a research organization that perfected Polaroid and now employs twenty top-flight scientists.

Mr. Wheelwright is currently engaged in a national lecture tour explaining Polaroid and its uses to institutions of learning, lighting and optical interests, and the many business men who visualize its use in their industries. Other lectures may be given in Chicago, Professor Roesch reports, if the auditorium cannot accommodate those wishing to attend.

At the last meeting of the society, A. J. Smith of the Calumet Refining Company, presented a sound movie showing the processing of petroleum from the well to the consumer.

The film demonstrated the method of refining used by the Calumet Oil Company. This method, patented under the name of Schulze High Vacuum Process, is unique in that it prevents the oil from reaching the cracking temperatre and decomposing. Thus, all the lubricating properties of the oil are retained.

Another interesting portion of the film showed the sludge formed when oil is permitted to oxidize and react with the acids formed in the engine. The vacuum process seems to aid in freeing the oil from this sludge without using any solvents in the process. Actual tests showed loss of weight in bearing metals when a corrosive oil was used. The meeting adjourned to the physics lecture room where Mr. Smith demonstrated viscosity tests using the Stevens Viscosimeter with various types of motor oil.

Methods of Dealing with Unruly Frosh Invented

CORVALLIS, ORE. — (ACP)— When Oregon State College freshmen fraternity pledges decided to walk out on their newly-found "brothers," they failed to reckon with the punishment for their sins.

After the neophytes decided they'd put their older members in their places by staging a mass exit, they finally returned to find the following "duties" awaiting them:

The Alpha Tau Omega's stayed up all night waxing floors, polishing furniture and trophies. Of course, whacks and cold showers were in the offing. At the Kappa Sigma house a nice lively lamb was left for the boys to take care of along with sawdust inches thick on the floor to be cleaned by 6:30 o'clock in the morning.

Now to get to the girls' punishment. The Kappa Kappa Gamma girls ate onions and brains and left their make-up kits at home the next day. They also cleaned house until early in the morning and slept on hard floors all night. The Alpha Gam's managed to get cold water baths from their members and all the fraternities around joined in and gave them good duckings.