and complex compounds, minerals and ores—is discussed in a special article by a leading authority on this subject. The remaining articles deal with original research and they include the following topics: thermographic methods, viscosity of liquid systems, properties of various chemical systems and alloys, potash salts, etc. The volume is well printed and provided with the portrait of N. S. Kurnakov and numerous plates of photomicrographs and diagrams. Unfortunately there are no English summaries.

It is rather difficult to give an adequate account of the achievements of Kurnakov's school of research, but specialists in given branches of chemistry and other sciences are probably acquainted with the abstracts of Russian papers and with the papers published in the *Z. anorg. Chem.* and *J. Inst. Metals.* The whole range of these publications can be roughly assigned to three sections: (1) metals, (2) minerals and ores, and (3) general chemistry. The works dealing with metals are chiefly concerned with the thermal study of alloys from the point of view of the phase rule, and a very detailed correlation of the composition with viscosity, hardness, electro-conductivity, etc., is usually made. The works dealing with minerals and ores cover a wider ground. First in order of importance comes the study of the equilibrium of salt solutions, a study which not only made a valuable contribution to theoretical science but also greatly helped in the development of Russian salt deposits and the salt industry. The application of physico-chemical analysis to other minerals and ores has embraced practically all classes of minerals: silicates, carbonates, oxides, borates, native elements, etc. Probably the most outstanding achievement was the study of the minerals of the platinum group, clay minerals and bauxitic minerals, a work which had a most important practical application in the U.S.S.R. Of the problems concerned with the general chemistry one may mention the study of organic compounds, compounds with complex radicals, the general study of equilibrium systems and the topology of the equilibrium diagram.

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[1] Kurnakov, N. S., "An Introduction to Physico-chemical Analysis". Publication of the Acad. Sci. U.S.S.R., 1st ed., pp. 87 (1925); 4th ed., pp. 562 (1940) (in Russian).

[2] Kurnakov, N. S., *Ann. Inst. Phys.-Chem. Anal.*, **2**, 473 (1924) (in Russian).

[3] Briscoe, H. V. A., *Nature*, **148**, 310 (1941).

[4] *Annales du Secteur d'Analyse Physico-Chimique. Inst. de Chimie Générale, Acad. Sci. URSS.*, **14** (1941) (in Russian).

SOLAR RADIATION OBSERVATIONS AND VOLCANIC DUST

IT was observed by Dr. C. G. Abbot that dust from the Alaskan volcano Katmai in June 1912 affected the transparency of the atmosphere in the northern hemisphere, but failed to influence the pyrheliometric observations at Arequipa, Peru. This led George G. Gallagher of Glendale, California, to inquire whether or not dust from southern hemisphere volcanoes influenced the atmosphere in the northern hemisphere. This matter has just been investigated by L. B. Aldrich from the records of the Smithsonian solar-radiation stations for the Chilean Andes eruptions of April 1932*.

The Andean eruptions of 1932 started on April 10, involving some seven volcanoes extending two hundred miles along the Chile–Argentine border from Tupungato (altitude 2',000 ft., lat. 33·5° S.) southward to Quizapu (altitude about 10,000 ft.). Loud explosions were heard 100 miles on either side of the volcanoes. The explosions continued for three days. Surrounding towns were in semi-darkness owing to the steady fall of dust and ashes. In Montevideo, 850 miles away, the steady fall of dust continued for many hours. The late Dr. C. Davison estimated the fall of dust over the area to be more than five cubic miles. Capt. R. Wooten, United States Air Attaché at Santiago, who flew across Quizapu at an altitude of 14,000 ft., estimated that at the time of greatest activity the smoke column rose to a height of 30,000 ft. Evidences of unusual dust in the atmosphere were noted at Wellington, New Zealand, on May 7, reaching a maximum about May 26. Unusual skies were also reported during May from various places in South Africa.

During this time the Smithsonian Institution was operating solar-radiation stations at Montezuma (latitude 22° 40′ S., longitude 68° 56′ W.) and at Table Mountain, California (latitude 34° 22′ N., longitude 117° 41′ W.). At both these stations, on all days when the sky around the sun was clear, observations were made with the silver-disk pyrheliometer, measuring the total solar radiation received upon a surface normal to the radiation. Simultaneously, readings were taken with a pyranometer, measuring the brightness of the sky in a circular zone about 10° wide, concentric with the sun. These pyranometer readings are an index of the quantity of dust in the atmosphere. Values of pyrheliometry and pyranometry at air mass 2·0 (solar altitude 30°) were selected from the observations and used uncorrected to mean solar distance. These were grouped by months and so chosen that the average amount of water vapour in the air above the station was the same in each year for a given month. The amount of water vapour in the air may be represented by the spectrobolometrically determined precipitable water value. The year 1930 was taken as a standard for comparison. The following tables, obtained by L. B. Aldrich, indicate the results of the investigation.

PERCENTAGE DEVIATIONS OF PYRHELIOMETRY AND SOLAR CONSTANTS FROM CORRESPONDING MONTH OF 1930.

	Pyrheliometry		
Month	Montezuma per cent	Table Mountain per cent	Solar Constant per cent
May 1932	— 3·7	+ 0·8	— 0·4
June ,,	— 3·4	— 0·5	— 0·1
July ,,	— 2·6	— 0·1	— 0·1
Nov. ,,	— 2·1	0·0	— 0·2
May 1933	— 0·1	— 0·4	— 0·4

PERCENTAGE CHANGE OF SKY BRIGHTNESS AROUND THE SUN FROM CORRESPONDING MONTH OF THE YEAR 1930.

Month	Montezuma per cent	Table Mountain per cent
May 1932	+ 157	— 23
June ,,	+ 114	— 3
July ,,	+ 87	— 5
Nov. ,,	+ 44	+ 1
May 1933	— 19	+ 8

No effect of the Andean eruptions is discovered in the Table Mountain, California observations. A definite effect occurs in the Montezuma pyrheliometer values, with a maximum of 3·7 per cent depletion in May 1932, and an average of 3·0 per cent for the months May, June, July, November. This agrees with Mr. Gallagher's estimate.

* "Smithsonian Pyrheliometry and the Andean Volcanic Eruptions of April 1932", by L. B. Aldrich. *Smithsonian Misc. Coll.*, **104**, No. 6, July 3, 1944.

From the Montezuma records, the following unusual sky observation reports are taken (1932: C. P. Butler, director).

April 13. Horizon to south very hazy with yellowish-looking dust. Nothing further is noted until—

April 22. Good sky. Very hazy over mountains to east.

April 23. Very heavy layer of yellowish haze over mountains to east, extending up to about 10°.

April 24. Very poor sky. Streaks from horizon to zenith, with whitish glare about sun.

April 25 and 26. Same notes as on April 24.

April 27 through 30. Dust in atmosphere almost totally obscures sun.

On April 30 the pyranometer value at air mass 2·0 was 0·131 calorie—ten times the normal value.

It should be noted that Montezuma is more than eight hundred miles north of the erupting volcanoes.

CARE OF THE WOUNDED

THOSE who had the experience of being transported, after the War of 1914–18, from, say, the less civilized Iraq of those days to a bed in one of the temporary military hospitals in England considered that they were being handled by an organization which it would be difficult to improve. But we realize, when we read the three articles contributed by a Special Correspondent to the *Lancet* (253, August 19, 1944; 278, August 26, 1944; 383, September 16, 1944), how much more is now being done for the wounded and the sick. These three articles on the wounded from Normandy must be read; they cannot be summarized. They explain why the casualty-rate among the wounded has been low. The doctor and the medical organization go right forward into the battle; paratroops and tanks have their field ambulances; the soldier knows much more about first-aid and about how to keep himself fit; surgical treatment is given early; blood transfusions are given much earlier; penicillin is available everywhere; and air transport, described in the second article, has been well organized. When they get to Britain, the wounded pass into the hands of the home hospital services and their network of ancillary organizations, which extend right back to the humblest civilian who goes along, when he is asked to do so, to give a pint of blood. The destinies of that blood have been described in the Press and pictured on the cinema screen. They are symbolic of the whole service. It is to be hoped that, after the War, this organization will be applied to national life in peace as well as in war, and that the soldier will bring back into civil life the knowledge of how to keep fighting fit which the R.A.M.C. has taught him so well that "nothing like it has ever been done either in military or civil life".

For those who are interested in this subject, the article entitled "Military Surgery in Geographical Perspective", by Ian Aird, late Lieut.-Colonel R.A.M.C. (*Edinburgh Med. J.*, **51**, 166; April 1944) will be of great interest. The author deals with surgical strategy and tactics in Libya and discusses the influence of the physiography, climate, water supply, soil bacteriology, dust and sand storms, populations and communications of Libya on the planning of surgery for the campaign there. Little help was obtained from the history of previous North African campaigns. The rapid movement of the war there demanded mobile, self-contained units, and the caravan- and tent-operating theatres used are shown in photographs. The rest of the article describes the surgical technique employed, the water shortage and evacuation of the wounded by air. It may be compared with many other articles on the treatment of war wounds which have appeared in the medical Press.

Almost as frequent have been articles on the transport of the wounded or of those injured in air raids. Among these there have been numerous descriptions of stretchers designed for rapid transport of injured people and adapted for use for artificial respiration as well. D. G. Duff (*Lancet*, 798, June 17, 1944; see also the *Lancet*, 739, June 3, 1944) describes one of these stretchers. Dr. Duff's stretcher is the result of experiments made over six years, experience of climbing accidents being included. Photographs of it illustrate its use. It is comparable in weight and ease of production to the standard army stretcher, and can be used as a breech buoy and for Eve's rocking method of artificial respiration. Runners beneath it enable it to "be its own vehicle" on any slope and on rock, grass, scree, heather, ice and snow; or it can be used for lowering a patient from a window. A wheeled undercarriage is available and a collapsible form of it can be got into a package 4 ft. 6 in. × 10 in. × 4 in.

BIOLOGICAL STUDIES IN BRAZIL

BRAZILIAN biologists and medical men have made, and are making, valuable contributions to knowledge. The wide field which they cover is indicated, not only by their medical journals, but also by the policy of some of their biological periodicals, which publish articles on subjects which, in other countries, would be printed in medical literature. Thus the *Revista Brazileira de Biologia* (**3**, No. 4; 1943) contains papers on immunology, such as those on protection tests with Felix's antityphoid serum, on oxidation and reduction of complement and on the antibodies to the virus of equine encephalomyelitis; and others on cryo-epilepsy, on Henry's melano-flocculation reaction and on Wolff's buffer-precipitation test in malaria, Chagas's disease and schistosomiasis. Another paper discusses the action of acetylcholine and of adrenalin on the coronary arteries of the Brazilian macacus monkey, *Allouata fuscus*. The rest of this issue deals with more specifically biological subjects. Thus there are articles on two Lepidoptera, *Automolis* and *Rhipha*; and on the unity or duality of the males of the hymenopterous parasite, *Telenomus fariai*, in which the author concludes that the two classes of males are morphologically identical, produce the same progeny from the female and always have ten chromosomes, while the female has twenty. Their difference in size depends on the amount of food that is available. Other articles deal with a new trematode species, *Catadiscus mirandai*, from the large intestine of *Hemipipa carvalhoi*, with some spiders of Chile, with two new species of *Stenolemus* (Reduviidæ, Hemiptera) and with the hyoid and laryngeal apparatus of some Microchiroptera. Botanists will be interested in the article on the nomenclature of *Capsicodendron Dinisii* (syn. *C. pimentiera*, Canellaceæ). The social importance of scientific investigation is discussed by Dr. Oswaldo Cruz, of the famous Institute which bears his name.