research. If we are to promote research, too great emphasis must not be placed upon administrative positions while too little emphasis is placed upon the activities for which the institution in reality exists. Distinguished service in the form of productive work and inspiring teaching must not be allowed to go unrecognized, but recognition must not consist in moving the able investigator or teacher out of his most effective realm and into administrative circles.

My object in these remarks has been that of pointing out a few of the more general problems which might not receive their just consideration if we hasten to focus our attention too directly and exclusively upon the application of research. I have chosen this course with full knowledge that I could say nothing new or particularly interesting. As regards the work of this association I am strongly convinced that from the beginning our course must be purposeful and our program must be one of activity. It would be my hope that every panel discussion in which we engage may be so thorough and comprehensive as to form a point of departure for some concrete course of action. I am strongly convinced, furthermore, that one of the most effective contributions which this organization may make to the progress of the South lies in the fostering of the scientific approach to problems of public concern, and that scientific research can do little more than survive in an unscientific atmosphere. If research is to progress it must have the sympathy and support which can come only when the public understands something of its aims, its problems and its possibilities. I am still further convinced that if applied research and industrialization are to make their rightful contribution to the progress of the South they must be built upon a strong educational system. The universities which train men for research constitute the foundation upon which applied research must rest.

It is my sincere belief that if this association can enlist the interest and the cooperative effort of leading scientists and industrialists in this region it may become the greatest single force in the economic and social development of the South. This organization should assume the function of keeping its hand upon the pulse of the South and of giving direction to its scientific and industrial development through the utilization of its resources. The extent to which this association succeeds in assisting in the building of the South through research will depend upon the extent to which the scientific principles of diligence in the search of facts, objectivity, open-mindedness and integrity characterize our methods. Should its efforts cease to be strictly scientific and tend to become promotional in character it will undoubtedly fail.

# COLLECTIVE FARMING IN RUSSIA AND THE UKRAINE. II

By Sir JOHN RUSSELL, F.R.S.

DIRECTOR OF ROTHAMSTED EXPERIMENTAL STATION

THE results of the recent farming efforts in Russia up to the end of 1938 when the last official figures were issued have been: (1) an increase in numbers of livestock so that they had nearly reached the high levels of 1929, pigs indeed had exceeded all previous records; (2) an increase in the area of cultivated land, which fully kept pace with the increase in population; (3) marked increases in the area of fodder and of technical crops; (4) a smaller increase in area of grain crops which represented three quarters of the whole sown area. The yield of cereals per acre is still dependent largely on the season and it is not certain that any increase has occurred; comparison is rendered difficult by a change in 1933 in the method of estimating the yield; American authorities consider that the new method gives estimates about 5 per cent. higher than the old one for one and the same crop.

The grain results for the U.S.S.R. are given in Table VIII.

TABLE VIII

OUTPUT OF GRAIN, U.S.S.R.

| | Population, millions | Total area sown, million ha. | Cereals sown, million ha. | Cereals produced, million tons | Yield quintals per ha. |
|---|---|---|---|---|---|
| 1913 | 134 | 105 | 94.4 | 78.8 | 8.49 |
| 1934 | | 131 | 104.7 | 88.0 | 8.54 |
| 1935 | | 132.8 | 103.4 | 88.7 | 8.71 |
| 1936 | | 133.8 | 102.4 | 81.4 | 8.08 |
| 1937 | 169 | 135.3 | 104.4 | 118.1 | 11.52 |
| 1938 | | 136.9 | 102.4 | 93.5 | 9.28 |
| Increase per cent. | 27 | 30.4 | 8.5 | 18 | |

1 q. per ha. = 0.8 cwt. per acre. Biological estimates introduced in 1933. Average yield of wheat in England and Wales 18 cwt., and of oats and barley 16 cwt. per acre.

The villages themselves lack picturesque attractiveness; usually they are built along a road or sometimes round an open space, but it is always an earth road with no side walk, very muddy in wet weather and very dusty in dry. The cottages are small and very simple, made of local materials, wood in the north, wood or whitewashed adobe in the center and the Ukraine;

thatched with straw or roofed with wood or sheet iron, painted red but soon becoming reddish brown. Iron is safer from fire. In the north there is an attic or garret; elsewhere the cottages have one story only. Usually there are two rooms and a kind of entrance or large lobby, beds in each room, one room has the brick stove, in the lobby there is a cooking stove, but in the south this is often outside, it is then made of clay. Beyond a table and a few seats there is little furniture, though there may be a kind of dresser or cabinet containing some china. In the Ukraine there may be a trunk holding some of the old peasant embroidered work and shown by the old lady with great and justifiable pride. Usually an ikon hangs in a corner, which, it is explained, is for the old people; there may be a portrait of Stalin for the younger ones; a few faded personal photographs may complete the adornment. Lighting at night is sometimes a difficulty when shortage of fats and oil have curtailed supplies of candles and lamps; a pine splinter may then be used. But many villages have electric light. Usually there is no sanitation. Water is drawn from a communal well operated by a wheel and bucket; naturally this becomes a center of life and gossip. Elsewhere the cottage has its own well with a long pole as lever to lift up the bucket. In summer there are many flies, though a vigorous campaign is organized against them and on the clinics you may see a scarlet banner with the slogan, "Keep away flies: they cause decay and disease," or another, "Keep clean and so prevent disease." There are mosquitoes and various domestic insects. When you have seen a peasant woman combing a girl's hair you appreciate the force of Postyschev's demand that "hygienic baths and hairdressing shops in the villages must occupy an important part in our Party organization." Naturally one hears of dysentery, enteric, malaria and, at times, typhus, besides stomach troubles. Where there is a local hospital the doctor, often a woman, is kept very busy. The very young children often look sickly; those that grow up, however, look well and in summer they get much sunshine. There are lots of them, very friendly and accessible, very fond of being photographed. The government encourages large families and gives a bonus of 2,000 rubles for the seventh child. But it is only in the country you see them; the town dwellers, like our own, usually have small families.

The women commonly wear a dark skirt and white blouse with a white cotton square tied round the head, but the younger ones wear a printed cotton frock and a printed or embroidered square tied at the back of the head. The embroidered peasant frocks and saraphans of the old days are out of use and deemed old-fashioned. The men commonly wear tunics, trousers and peaked caps; some are bare-footed, some wear bast shoes, others canvas or leather shoes; the smart young men in the Ukraine wear white tunics with embroidered edge and the high Russian boots. All clothing, however, is of very poor quality; the clothes of my English friends were always stared at with great curiosity. One sees few old people either in villages or towns; Russia always impresses the Western visitor as a land of young people. The survival rate after 50 is not as high as in the west.

Each house is in its own piece of land, separated by a rough palisade from the road. Outside the house is the pile of fuel; always local material, it may be peat but is often straw briquettes. One sees but few flowers, although the Russians like them; there are vegetables, however, potatoes, cabbages, tomatoes and little cucumbers; these one finds and eats everywhere, and often the big watermelons. There are also poultry, one or two pigs and the cow, but usually no dog and no cat; you can travel far in Russia and meet few of either. The peasant's dietary is simple, mainly black bread, millet porridge (Kasha) and the vegetable soup known as "shchi"—made with much cabbage, some onions and other vegetables; or "borshch" made with beetroot. Sunflower oil supplies the fat, but some pork is eaten; sometimes you see tinned meat or, on the Volga, dried fish. Tomatoes and little cucumbers are much liked. Apples are the only fruit one sees as a rule; they are widely grown but not usually well grown; there is, however, good research on this subject. In the communal kitchen one often meets a compote made of fruit pulp. Tea and coffee are too dear for common use; on the Volga hot water with a piece of apple in it is often drunk. As alcoholic drink there is kvass, made from fermented black bread and when well made something like fortified ginger beer, and the universal vodka—a very potent spirit of which a good deal is consumed. One notices this in the provincial towns at night.

The administrative center of the village is the chairman's office, usually the cottage of a former kulak, built of brick and somewhat pretentiously decorated. Here one is taken on arrival at the village. Of course you can not wander about in Russia as we do here; the visit has to be arranged well beforehand, no local official can give the necessary authority and higher officials are not easily accessible. In consequence of this difficulty I could not in 1939 obtain permission to visit any grain farm in the Volga region. In the office the president and some of the committee receive us; the book-keeper is there with his abacus. On the walls are the portrait of Stalin, a print or some chart likely to interest or stimulate the village; it may be the list of yields or a diagram illustrating the different rates of work; a slow brigade represented by

a tortoise, the better brigades represented in ascending order by a donkey, a bicycle, a train, an autobus and an aeroplane. Something of the old kulak's possessions may remain; a walnut clock of Victorian design but long since stopped; a very poor picture; I have even seen a book left by the former owner, the German manager of the estate; it was a Brokhaus Lexicon, with pictures on the inside cover drawn by his children —all long since "liquidated" like himself.

Another communal building is the club-house, for the Russians are very sociable and gregarious; here there may be a library, a radio set and a gramophone. The Russians dearly love these; there are scarlet slogans advising you to listen in. The loudspeaker works almost incessantly on the Volga steamer, in the long distance trains, in the city parks and elsewhere; noise never disturbs a Russian. The accordion and balalaika still survive. Then, too, there are facilities for lectures; these in summer afternoons are in the open air, and the lecturer is sent down by the Party. There is no complication about conflicting points of view; only one Party and only one point of view. In going round an exhibition in Moscow with a few friends, one of them, a distinguished student of Russian history, was giving us some explanations in a very quiet voice, but was at once stopped by the attendant; only the official guide could explain. The Russian is eminently teachable and has great respect for teachers and especially for professors: in the villages I am always introduced as an English scientist, a specialist in soils, whose books are used in the Russian agricultural institutes; then comes the question, "Has he written anything about collective farming?" Technical books are very widely read in Russia.

The Soviet Government has done a great deal for the development of education both of children and of adults. For the small children there is always the crèche, in charge of a very kindly looking peasant woman. From 8 to 15 they go to the so-called seven-year school of which every village usually has one, or at least access to one, though the buildings may be as yet inadequate. There may be only three classrooms, one quite small. At first the instruction in the schools was related to the local industry, but that is now altered and the schools are on a uniform type of curriculum which is "cultural" not vocational. In the towns the "ten-year" school is now the standard. By 1939 the educational ladder was pretty complete and a bright child had a good chance of getting to the university; this was very different from 1930 or earlier, when only the Party ticket or proletarian birth would admit. I have known young people who could certainly have taken full advantage of a university education and knew it, but were refused; they remained always disappointed and with a bitter sense of frustration. Even by 1937 ability counted for more than birth or politics and by 1939 the change was complete. The universities were overflowing; one of the professors told me that the total number of students in the Russian universities was above 600,000, and that at the larger universities of Moscow and Leningrad there were ten applications for every vacancy. Many study science and engineering, others, especially women, study medicine or wish to become teachers. German, French and English are widely taught, yet it is most unusual to find any young people who can speak a word of any of these languages, in marked contrast with the older people of culture, many of whom spoke one or more of them with ease; the women often spoke French and the men German. I have often met German-speaking peasants, descendants of German immigrants of bygone days who, as long as they kept their old religion, kept their Biblical German language. But all that is now going and only the few specialist guides and translators can, as a rule, speak any language but their own. I asked some of my university friends why this was and received the reply: "Our education is cultural, not practical."

On the technical side the immense leeway is being made up. It is hard for us to realize what a colossal task this has been. In the old days Russian workmanship was proverbially bad. It is still often stated that the Russian is a poor mechanic, that maintenance of machinery and buildings is inadequate, that tractors and motors are not properly cared for and that many of the tractors are out of commission. But one must remember the enormous difficulties. Very few of the present generation had, as children, any mechanical toys, apart from some very ingenious wooden toys made by the peasants. Very few even now possess a bicycle, in many villages you see none and I remember once being kept waiting some ten minutes while a bicycle was fetched to show that this village really had one. There are official cars, but hardly any private cars or motor cycles and few taxis, no visible garages, nowhere where a boy can grow into the idea of machinery. In the hills of Georgia I have even met a man who assured me that until he was 21 he had never seen a wheel. Even now, children's mechanical toys are scarce and dear; there are, of course, no cheap 6d. stores, and a very poor toy may cost 3 to 12 rubles. But there has undoubtedly been an advance; the number of tractors has steadily increased to well over a half a million and there are now many tractor drivers, some 25 per cent. being women. The Red Army has been a great educational force and has presumably trained large numbers of engineers and mechanics.

The only large building in the village is the church, often a brick building in the Byzantine style, now usually converted into a club or a grain store or

partly pulled down for its bricks. It is surprising that the Russian peasant, who is always described in pre-Revolution literature as whole-heartedly religious, should apparently have dropped his religion so completely. I talked once about this with a peasant girl who had been through the famine of 1921 and seen her family die, one after the other: first the baby, then the other children and the father, then the mother and finally she herself had laid down to die but was found by a rescue party. "If you had known," she said, "how much we prayed to the saints to help us and give us food and how terrible it was when they did nothing, then you would understand why we no longer believe in them." The young Russian intellectual, of course, had always been an atheist and claimed that science had displaced religion—visitors to the Tretyakovski Collection at Moscow will remember the ribald pictures of the village priests by Perov in the 1870's. It was the intellectual who furnished the ideas adopted after the Revolution. One meets many of these people at the universities and elsewhere; their attitude is always that religion is an antiquated, rather ridiculous superstition, not accepted by enlightened people, and the Russian desire to be counted among these is such that the argument carries great weight. To my question, "If a teacher had religious convictions would he be dismissed?" the answer was "No, not if he were otherwise suitable but we should try to teach him better." This combination of ridicule and lure of "culture" (in the Russian sense) has been much more effective than persecution in the struggle against the church. Religion still survives in Russia; the ikons remain in many of the cottages, there are still churches functioning and people attending the services. Funerals may be either "white" (religious) or "red" (political) and one sees a fair proportion of "whites." I was told, though do not know personally, that many marriages are now not simply civil but religious as well. And there is a Baptist movement both in Poland and in Russia, the depth and significance of which can not be estimated. The Russian must venerate something. Watching the long queue standing for hours in the heat and the glare as they wait to pass through the Lenin tomb in the Red Square at Moscow, one gets the impression of something more than respect for a dead political leader. But it is useless to speculate about the Russian peasant—as Turgenev says: "He is like a mysterious unknown: who knows him? He does not even know himself." There is, however, no doubt about the change in moral standards. Immediately after the Revolution there was a so-called liberation from the fetters of convention that led to considerable license. Lenin strongly opposed this and the new system was found to be pernicious and unworkable. The revolt against it came from the women and gathered force as the love of sport began to develop; football, volleyball, swimming, above all, parachuting—but not yet cricket or golf. There is perhaps no better tribute to Christian morality than the fact that the Russians have come to it not out of any acceptance of Christianity but because anything else did not answer in practice.

Children no longer receive religious instruction, but they are taught to do good work and to lead moral lives. Keen young people devote their spare time to the training of the children, so that the future may be happier than the past. And the most intense patriotism is drilled into them. Stalin's stirring invocation still holds them: "The supreme law of life" for the citizen "is to love his native soil, language and people; to extol the talents, abilities and achievements of himself and his fellow citizens; to hate and reject all that does not make for the greatness of the Soviet Union, the fatherland of fatherlands."

One of the modern popular songs I heard in 1939 proclaimed that "My country is rich and large; it has fields and woods and beautiful cities, but its chief riches are its people, more free and happy than anywhere else." It is in this faith that the young Russians have been brought up and this, combined with the peasant's deeply rooted and almost fanatical attachment to the land, accounts for the superb resistance they are now putting up.

It is probably true that this war would never have arisen had there been in 1939 the same cooperation between Russia and Great Britain as exists to-day. It seems certain that the future peace of the world depends on a continuance of such friendly relations as will ensure similar cooperation whenever peace may be threatened. But friendly relations are possible only on a basis of mutual understanding and respect. We shall always differ in many ways from the Russians in our outlook and mode of life, and nothing is gained by slurring over the differences or pretending that our points of view are the same. Without giving way on any principles which we hold dear we can find much in common with the best of the Russians. Their history has been one long pageant of suffering, yet through it all has shone an intense feeling for humanity, a desire for a better and happier life for those who come after us. It is vividly shown in their literature, in Tolstoi, in Dostoevsky, in Chekhov, in Gogol—even though some of their writings emphasize the gloomy depths of the Russian character just as their ballet reveals something of its dazzling heights. "How much anxiety," says Tolstoi, "how much suffering we go through before happiness is our return!" And it constantly comes out in daily life in Russia: "Things have been bad for me," a workman once told me, "but I don't mind; they will be better for my children."

The picture of Russia I always like to remember is that of my friend Sonia among the children trying to ensure that their lives may be happier than hers has been. There surely we have a solid foundation on which fruitful Anglo-Russian friendship can be founded.

# SCIENTIFIC EVENTS

## DEATHS AND MEMORIALS

HENRY GRANGER KNIGHT, since 1927 chief of the Bureau of Chemistry and Soils of the U. S. Department of Agriculture, died on July 13, at the age of sixty-three years.

CAPTAIN WILLIAM JOHN PETERS, formerly chief magnetic observer of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, died on January 10, at the age of seventy-nine years.

HENRY GERBER REIST, who retired as chief of the alternating current engineering department of the General Electric Company in 1930, died on July 5. He was eighty years old.

DR. DAVID WILLIAM CORNELIUS, professor of physics at the University of Chattanooga, Tennessee, died on June 2, at the age of fifty-seven years.

DR. WILLIAM MCCULLY JAMES, for twenty-six years chief of the Hospital of Panama and of the Herrick Clinic, died on July 10, aged sixty-two years.

CHARLES CARMICHAEL ARTHUR MONRO, assistant keeper in charge of Annelids in the zoological department of the British Museum (Natural History), died on June 21.

ACCORDING to *Nature*, it has been announced that among the Czechoslovak patriots recently executed by the Germans are a university dean and two professors, several secondary schoolmasters and a number of young men described as university students, although the universities have been closed for nearly two years. One of the professors was Professor Jaromir Šamal, formerly professor of entomology in the Prague College of Agriculture, whose work had considerable local importance through his books in Czech on the anatomy and life-history of insects, on their ecology and their economic importance. Dr. Šamal was forty-one years of age.

THE *Journal* of the American Medical Association reports that an annual W. J. and C. H. Mayo Memorial Lectureship in the field of medicine and surgery has been established at the Medical School of Dartmouth College, by Dr. and Mrs. Waltman Walters, Rochester, Minn. The memorial is established as "a stimulating factor in interesting men in medicine and surgery; particularly to call attention to the accomplishments of Drs. W. J. and C. H. Mayo in these fields."

## AWARDS OF THE SOCIAL SCIENCE RESEARCH COUNCIL

SIXTY-FIVE awards, amounting to $77,700, for the academic year 1942–43, have been announced by the Social Science Research Council. The awards provide for study and research in the fields of economics; political science; sociology; statistics; political, social and economic history; cultural anthropology; social psychology; geography and related disciplines.

Ten of the awards, carrying a basic stipend of from $1,800 to $2,500 for twelve months, plus travel allowance, cover post-doctoral research training fellowships to men and women under thirty-five years of age who possess the Ph.D. degree or its equivalent. These fellowships are granted for the purpose of enlarging the research training and equipment of promising young students in social science through advanced study and field experience.

Fifteen appointments are pre-doctoral field fellowships which carry a basic stipend of $1,800 for twelve months plus travel allowance. The recipients are graduate students under thirty years of age who have completed all the requirements for the doctorate except the thesis. The purpose of these awards is to supplement formal graduate study by opportunities for field work which will assure first-hand familiarity with the data of social science in the making.

The remaining forty awards are research grants-in-aid designed to assist mature scholars in the completion of research already well under way. These grants average about $400 and do not ordinarily exceed $1,000. Nine of these appointments were made through a special fund specifically granted for the purpose of assisting and encouraging the research of social science faculties in the South. The objectives and requirements for eligibility are the same as those governing the national grants-in-aid, but applications are restricted to fourteen southern states.

## RETIREMENTS AND APPOINTMENTS AT THE AMERICAN MUSEUM OF NATURAL HISTORY

A REORGANIZATION of departmental classifications in the American Museum of Natural History, with the retirement of four members of the scientific staff, was announced on July 16 by A. Perry Osborn, act-